THE CONTINENTS AND THEIR PEOPLE

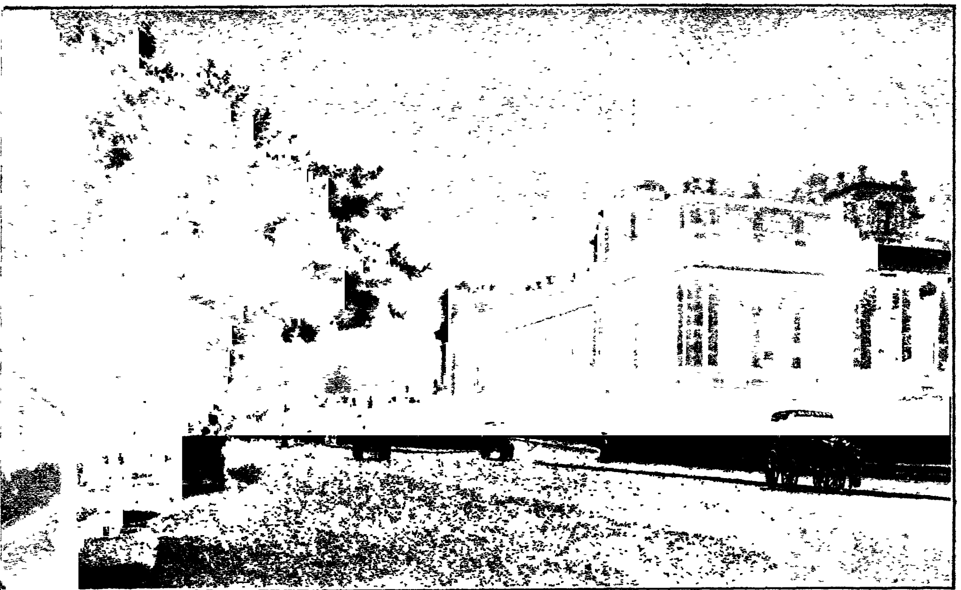
OCEANIA



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Courtesy F. T. A Fricke, Government Representative from Victoria, Australia.

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THE CONTINENTS AND THEIR PEOPLE

OCEANIA

A SUPPLEMENTARY GEOGRAPHY

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PREFACE

During recent years Australia and the islands of the Pacific have attracted much attention. In these times of hunger for land, Australia is one of the few areas toward which settlers with limited means can turn. This is because the country is very sparsely populated, which in turn is the natural result of light rainfall in most of the continent.

The people of Australia have faith in their country, and faith in themselves. Through irrigation vast tracts have been reclaimed. Cities have sprung up in the desert in response to the rich deposits of gold and other forms of mineral wealth. Telegraph lines cross the continent, and railroads are steadily opening up new areas. Australian cities are as progressive as any in the world, and government and education are abreast of the times. To a larger extent than is true of any other continent, Australia is being developed by the people of a single nationality, English.

Most of the islands discussed in this volume have tropical climates. They are therefore not suited to be the homes of large numbers of white laborers. These very climatic conditions, however, cause them to be important economically, and they help to supply the people living in temperate lands with valuable commodities.

Many of these islands have an importance entirely apart from the economic. The absence of cold weather, the beautiful scenery, and the interesting human conditions attract many visitors. As some of these islands belong to the United States, we are especially interested in them.

In this, the last volume of The Continents and Their People Series, the authors have presented some of the more important phases of the geography of Oceania. As in the other volumes of the series, an attempt has been made to show, in an interesting manner, the relationships between human life and its environing conditions, and to adapt the material to the ability of the pupil.

For photographs and valuable printed matter the authors are especially indebted to the following: Immigration and Tourist Bureau, Sydney; Department of External Affairs, Melbourne; Immigration and General Information Bureau, Perth; Mr. F. T. A. Fricke, Government Representative from Victoria;

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PASADENA, CALIFORNIA.

CONTENTS

OCEANIA

CHAPTER I

THE CONTINENT OF AUSTRALIA

SOUTHEAST of Asia the Pacific Ocean is dotted with islands. There are thousands of them, and although some are large, they are in most cases so small that you have never heard of them nor even seen their names upon a map. The larger number of these islands are either of coral or of volcanic origin. The chief islands and groups of islands in the South Pacific are the Philippines, the East Indies, Australia, Tasmania, New Zealand, the Solomon Islands, the New Hebrides, the Fiji Islands, the Samoa Islands, and the Hawaiian Islands. To these and the many other groups, the name *Oceania* is commonly applied.

Australia is the only body of land in Oceania that is called a continent. It is the smallest of the continents, yet it is nearly as large as Europe, the United States, or Canada. When we compare these areas as to population, however, we find a great difference. The total population of Australia, according to the census of 1911, was 4,455,005. As there are several large cities,

you can see that the rural population of Australia is very sparse. London has a much larger population than this. The newness of the country and the lack of rainfall are important reasons for the sparse population.

Although the coast line of Australia is remarkably regular, there are some excellent harbors, especially on the east. Adelaide, Melbourne, Sydney, Newcastle, and Brisbane are located upon good harbors. Along the northeastern coast, for a distance of about 1000 miles, there is a passage sheltered by the continent upon one hand and the Great Barrier Reef upon the other. This passage averages thirty miles in width, and many vessels take advantage of the quiet water. Lighthouses have been erected as a protection to mariners.

The Barrier Reef is a coral formation built by the action of the coral polyps. In fact, the reef is constantly being added to. The reef-building polyps generally live in water less than one hundred feet deep, and in the warm parts of the ocean. They extract carbonate of lime from the sea water and build it into hard outside skeletons for their jelly-like bodies. The polyps live in communities, and as they die their skeletons are broken from those of the live polyps and piled up by the waves. Floating seaweed or driftwood may here find a lodgment. Little by little as a reef rises above the water, soil is formed and vegetation takes possession.

The corals are of various forms, and they are given names to correspond. For example, there is brain coral, chain coral, cup coral, mushroom coral, and other kinds. The coral of which the reef is composed is white and has no commercial value. Red coral is found in deeper water and is quite valuable.

In Australia, as in the other continents, the highest mountains face the Pacific Ocean. Nowhere in Australia are there mountains which approach in altitude the most lofty peaks in the other continents. You remember that even in the equatorial parts of Africa and South America there are mountains upon which glaciers are found. There are no glaciers in Australia, although in times past there were.

The highest mountains of the continent are known as the Dividing Range. These extend from Cape York in the north to the extreme south. Local names are applied in the various sections through which they pass. The most lofty division is in the southeast, where the term Australian Alps is used.

Mountains extend parallel to the west coast for several hundred miles, and there are scattered ranges in the interior. The most important of these are the McDonnell and the Musgrave ranges. They are not high enough to cause any considerable amount of rainfall, however.

East of the mountains that run parallel with the



FIG. 2.—Relief Map of Australia.

Pacific coast, there is, as the map indicates, a coastal plain. The eastern slope of the mountains is so steep that for many years no white man crossed them. The necessity of finding new pasturage for stock during years of little rainfall finally led the settlers to push beyond the mountain wall.

From the mountains westward the slope is quite gentle, and much of southeastern Australia is low and flat and is at times flooded. Owing to the extreme aridity, the interior is not yet fully explored, but much of it is known to be uninhabitable.

Not only are the mountains of Australia lower than those of other continents, but its rivers are smaller and less numerous. In fact there is but one long river in the whole continent, the Murray-Darling. Although this is one of the long rivers of the world, it is on the dry side of the mountains and therefore is not great as to volume. During the dry season, it carries little water.

The Murray-Darling draws its supply of water from the melting snows which cover the highest peaks in the Australian Alps for several months each year, and from the abundant rainfall in the same section. When the snow is melting most rapidly, the river is in flood; for, as has been said, much of the basin is low, flat land. During this season, the river is navigable for a considerable distance.

As the eastern mountains are so close to the coast,

the streams that flow to the Pacific Ocean are short and swift. Some of them carry considerable water. For more than 1000 miles along the south coast not a river reaches the sea. The largest stream in the interior is Cooper River, which empties into Lake Eyre. While this river is several times as long as the Hudson, it is an intermittent stream. The lack of rivers has always been a serious obstacle to the development of Australia.

As in Africa, central Asia, and the Great Basin of North America, such streams as exist in the interior of Australia empty into sinks and lakes, most of which are salt or brackish. The largest of these lakes are Torrens, Gairdner, Eyre, Amadeus, Frome, and Gregory. Even these bodies of water are reduced to the condition of swamps or mudholes during the dry season.

Australia lies partly in the torrid and partly in the south temperate zone. A considerable part of the continent is, therefore, in the belt of southeast trade winds. These winds, blowing from the water to the land, are moisture laden. As they come in contact with the eastern mountains, abundant rainfall results. At many places on the eastern slope, the rainfall is more than fifty inches per year. This, together with the relatively high temperature, produces luxuriant vegetation, including fine forests.

Beyond the Australian Alps the rainfall conditions are very different. The dense forests with their palms,

ferns, flowers, and flowing streams disappear. There are park-like expanses where the Australian gum, or eucalyptus, tree that sends its roots very deeply into the earth grows. These areas give place to pasture lands; the pastures give place to districts covered with a thorny vegetation called "scrub"; and these in turn to the desert region, where the rainfall is still less. More than one half of the continent receives less than twenty inches of rainfall per year. How does this affect agriculture?

Along the southwestern coast, owing to the influence of the mountains and to the prevailing westerlies, there is considerable rainfall, amounting to from twenty to thirty inches annually.

The great variation in rainfall from year to year is a very serious matter. When an unusually dry year or a series of dry years occurs, the cattle and sheep cannot find sufficient pasturage. At such times the stock men suffer very great loss. The people of Australia have had several such experiences.

The climate of Australia is very healthful. This is because of the absence of great jungles and swamps such as exist in central Africa. Owing to the influence of the ocean, the coastal regions, which is where most of the population is found, do not have the high temperatures that occur in the interior. At Sydney the average annual temperature is about

63° F. This is about the same as that of San Diego, California.

The plant and animal life of Australia is very peculiar. Of the many forms of plants, the larger number are not native to other parts of the world. This suggests that for a very long time this continent has been separated from all other land areas. While man can carry seeds and plants from one part of the world to another, nature usually finds it very difficult to do this, if lofty mountains or large bodies of water intervene.

Among the curious trees is the eucalyptus already mentioned. This tree can endure a dry climate. Its roots will penetrate the hard earth for many feet, and its leaves hang vertically instead of horizontally. This position reduces the loss of moisture by them. The trees shed their ragged bark yearly instead of their leaves. Usually the trunks have no branches for many feet above the ground, and such as they do have extend upward rather than outward. Such a tree shades but a small area.

Because the eucalyptus is adapted to a dry climate and because it is a rapid grower, man has taken it into various arid parts of the world. Countless thousands are now grown for fuel in California and South Africa. There are very many species of this tree, some of which are used as piles because they resist the action



Courtesy Immigration and General Information Bureau, Perth.

Fig. 4. — A Eucalyptus Forest in Western Australia

of the toredo, a water animal that bores into wood. Others are used in ship and house building. From one kind a valuable oil is made. Some eucalyptus trees grow to immense size. In southeastern Australia actual measurement has shown that a height of more than four hundred feet is occasionally attained. In what part of North America do the largest trees grow?

The acacia tree is very numerous also. There are many varieties, some of which have beautiful yellow blossoms which are very fragrant. Some of the scrub consists of dwarf forms of the eucalyptus and the acacia. The acacia is armed with thorns, and it is almost impossible for people to make their way through such a growth. The bark of certain of the acacia trees is used in tanning leather.

With some of the forms of vegetation you are familiar. In the moist coastal sections of the east and north the mangrove, bamboo, palm, cocoanut, banana, and fern are common.

The animals of Australia are even more interesting than are the plants, and a large number of them are not found elsewhere. The elephant, rhinoceros, hippopotamus, zebra, giraffe, and lion of Africa are not found. The bear, deer, elk, and buffalo of North America do not exist here.

You have seen, at the circus or in some park, a kangaroo. When the white people settled in

countless numbers of these animals lived there. The natives used them for food. Some kinds of kangaroos grow to a height of from five to six feet, and others are scarcely larger than a large rat. They carry their young in a pouch on the under side of the body.



Photograph by E R Sanborn, New York Zoological Society.

Fig. 5. — A Kangaroo.

An animal called the dingo, which is believed by some to be a wild dog, was formerly very destructive of sheep. It is now nearly exterminated. The duckbill is another very strange creature. It has a bill and feet like those of a duck, but its tail resembles that of a beaver. It lays eggs, but it nurses its young.

The jungle fowl, or scrub hen, builds a great mound of leaves, sticks, and dirt, in the center of which several of the birds lay their eggs. The eggs are then left to be hatched by the heat which results from the decaying vegetation. Both the eggs and the birds are good to eat.



Courtesy of Immigration and Tourist Bureau, Sydney.

FIG. 6. — The Platypus, or Duckbill.

There are parrakeets, cockatoos, emus, which are practically wingless, beautiful lyre birds, and many other strange forms.

Years ago rabbits were introduced from England. They multiplied rapidly and came to be a very great pest. Thousands of miles of woven-wire fence have been put up to prevent the spread of the animals. During the winter when there is comparatively little work on the farms, men and boys hunt and trap them. Shiploads of frozen rabbits are exported to the British Isles for table use. The skins are valuable, also, and are used extensively by American hat manufacturers.

Another animal that has been introduced is the camel. It is a very helpful creature and is extensively employed in transporting goods across the desert areas. Camels were first used in Australia in the construction of a telegraph and telephone line in 1872. As there were neither cattle nor sheep in Australia, the English imported these animals also. Cattle and sheep raising are now very important industries.

Wheat will do well in regions where the rainfall is not great, and Australia produces large quantities of wheat, excellent in quality. During some years there is much wheat exported, and during very dry years wheat is imported. Oats, corn, barley, and potatoes are grown wherever there is sufficient rainfall.

In Queensland considerable sugar is grown, and upon

the well-watered lowlands bananas thrive. In the southeastern part of the continent oranges, olives, and grapes do well. There wines and raisins are made. Owing to the lack of rain, only a small part of the total area can be cultivated.

Lands deficient in rainfall are often important in the raising of sheep and cattle. This is true of Australia. Upon her great extent of pasture lands probably 100,000,000 sheep graze, and she is the greatest wool-producing country in the world. Australian wool is the finest wool produced in the world, and is exported to Europe and to the United States.

Although there are great numbers of cattle, they are not so numerous as are sheep, for the latter can graze where cattle cannot find sufficient nourishment. Queensland is the most important state in the cattle industry. The animals are handled about as they are on our great cattle ranches. Beef, hides, butter, and cheese are exported.

The sheep and cattle men of Australia live upon very large estates called "stations." There are generally many thousands of acres in a station. Many of the owners have beautiful homes with all of the modern conveniences. Comparatively few men are required to handle a large number of sheep or cattle. This is one of the several reasons why the population of the continent is not greater.

as Newfoundland refused to join the Dominion, so New Zealand declined to become a part of the Commonwealth. Including Tasmania, Australia consists of six states and one territory. How many are there in our country?

A federal district, similar to our District of Columbia, has been established in New South Wales. It is about two hundred miles southwest of Sydney. The capital city, which will be called Canberra, will be located upon the Molonglo River. Except on the north and northeast, the valley in which the capital is situated is inclosed by mountains.

The Australian people plan to have one of the greatest capitals in the world. In the drawing of the plans architects from many countries competed. The prize was won by a young man living in Chicago.

In no other continent is such a large proportion of the people of one nationality. Practically all of the population is English. The continent is a part of the British Empire. Name other areas which are parts of the British Empire. "A continent for a people, and a people for a continent" is an expression frequently heard in Australia.

bananas, oranges, lemons, tea, coffee, sugar, rubber, cocoa, rice, and pineapples are among the products. In the more temperate sections wheat, corn, oats, potatoes, and similar crops are grown.

Upon the mountains and plateaus the temperature is lower than it is upon the coastal plain or in the

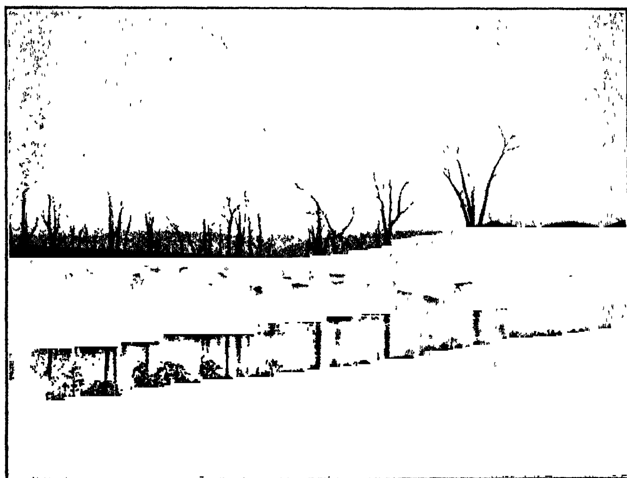


Fig. 8. — A View in Queensland.

interior. As much of the country is in equatorial latitudes, and as the mountains are not very high, there is nowhere in Queensland any very cold weather.

Much of the plateau district which lies west of the mountains is, during ordinary years, covered with rich grass. Because of this, large numbers of horses,

sheep, and cattle are raised. West of Brisbane the plateau is known as the Darling Downs. This section, which has an altitude varying from 1500 to 2000 feet, was once the scene of great volcanic activity. That was long ago, and the lava has been converted into a deep, rich soil. As the rainfall is sufficient, there is excellent pasturage and the area also produces splendid crops of grain and fruit. The chief town is Toowoomba. Locate it.

As in the dryer districts, the rainfall cannot always be depended upon, and the people have therefore drilled many artesian wells. In 1911 there were 1600 of them. Water obtained from these wells is stored in reservoirs and tanks. This has been a great help to stock men and to farmers.

The Pacific coastal plain was once covered with timber, and some of it remains. As there is a demand for timber both at home and in Europe, many sawmills have been established. Much of the land that has been cleared is now under cultivation. About nine per cent of the total area of the state is forested. There are eucalyptus, tulip, rosewood, red cedar, and, upon the highlands, beech, and pine.

Queensland has much mineral wealth. Of the various minerals gold is the most important. This was discovered in 1858. Copper, silver, tin, and coal exist in considerable quantities.



Courtesy Department of Agriculture and Stock, Brisbane

Fig. 9. — Brisbane, showing Victoria Bridge in the Foreground.

The map shows you that there are several railroad lines in the state. The total mileage was in 1911 a little more than 4000. In the German Empire there are more than 38,000 miles. Why is there such a difference? Lack of sufficient roads is a serious hindrance to development. There are large areas where, at the present time, crops cannot be profitably grown because of this lack. As the rivers are short, they help very little in this matter.

In common with the other Australian states, the cities are nearly all on or near the coast. At Mackay and Bundaberg sugar is manufactured. Rockhampton and Gladstone draw upon a large area and export wool and meat. Considerable lumber is shipped from Marysborough.

The one large city of the state is Brisbane. It is situated upon the river of the same name, about twenty-five miles from the sea. Although founded in 1825 its population was in 1911 but 139,480. Small vessels ascend to the capital, but large ones stop at Pinkenba, nine miles below. The two cities are connected by rail.

Brisbane owes its importance in part to the fact that it is a market for products of the Darling Downs. It is the terminus of two important railroad lines, one extending nearly west and the other south. Its exports are extensive, the chief being wool, meat, hides, skins, and butter.

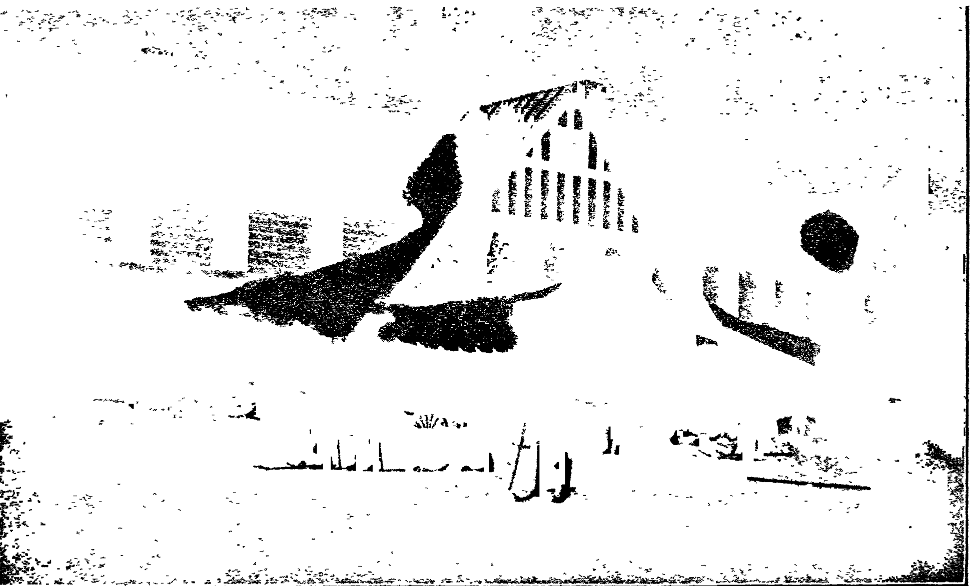
CHAPTER III

NEW SOUTH WALES

THE oldest of the Australian states is New South Wales. Its area is not nearly so great as that of Queensland, but it is much more favorably situated, being entirely in the south temperate zone. Because of its situation, its climate is much better adapted to white people than is the climate of Queensland. The population is, therefore, more dense. In 1912 it was 1,738,600.

The distance of the mountains from the coast varies from thirty to more than one hundred miles. The altitude is about the same as that of our Appalachian Mountains. The highest peak, Mt. Kosciusko, is close to the boundary between New South Wales and Victoria. Its summit is 7300 feet above sea level.

The Australian Alps and the Blue Mountains are names applied to the mountains of this state. Some of the scenery is very beautiful. Just as the mountains in the eastern part of our country hindered for a long time the westward movement of the population, so the mountains of New South Wales confined the people



Courtesy Immigration and Tourist Bureau, Sydney.

FIG. 10. — Hotel Kosciusko on Mt. Kosciusko.

to the coastal plain until 1815. To-day, as the map shows you, railroads cross the mountains.

The coastal plain is well watered, and here, therefore, most of the towns and cities are located. Across the plain many rivers flow; but they are short and swift,



Courtesy Immigration and Tourist Bureau, Sydney.

Fig. 11. — A Wheat Field in New South Wales.

the largest being navigable for a short distance only. The Hunter, at the mouth of which Newcastle is situated, and the Hawkesbury are the most important of the east-flowing streams. The only large river basin in the state is that of the Murray-Darling, which is on the west slope.

The fertile soil, the moderate temperature, and the

abundant rainfall on the eastern slope make agriculture a profitable industry. On the warmer lowlands oranges, lemons, sugar, and other semi-tropical crops are produced. The rich pasture lands cause dairying to be an important occupation. On the plateaus where lower temperatures prevail, the fruits and grains of the temperate zone flourish. Upon the western slope where rainfall is light, there are extensive wheat fields; and in the regions where precipitation is insufficient for agriculture, great numbers of sheep graze.

West of the mountains there is a large area where artesian water is obtained. One of the wells is more than 4000 feet in depth. A small charge is made for watering the sheep, cattle, horses, and camels which are driven through the region.

Australia enjoys a great advantage in marketing her fruits in Europe. This is due to the fact that her seasons are the opposite, as to time of occurrence, of those in the northern hemisphere. When the countries of Europe are experiencing their winter, the states of Australia are having summer. Fruits, therefore, command high prices in the European markets. The same is true of butter.

New South Wales is the chief wool-producing state in Australia. The largest number of sheep are found where the yearly rainfall varies from 10 to 20 inches. If there is too much rainfall, the sheep are liable to



Courtesy Immigration and Tourist Bureau, Sydney.

Fig. 12. — A Flock of Sheep, Walla Walla Station, N. S. W.

disease. If it is too warm, the fleece is not heavy enough to be profitable. Millions of sheep are pastured west of the mountains, and wool is the leading export of the country. The sheep are now generally sheared by machinery, and consequently the work is done very rapidly. Because the wool is so excellent in quality, buyers from many of the countries of Europe, as well as from the United States, visit New South Wales each year.

There is much mineral wealth in New South Wales. Broken Hill, near the western boundary, is in a region rich in gold. Because of this, a railroad has been constructed from Port Pirie, on the east shore of Spencer Gulf, to Broken Hill.

There are great deposits of coal in the state. In the Newcastle fields there are many coal seams, each several feet in thickness. As there is no very great demand for coal in the home markets, considerable is exported from Newcastle. Locate Newcastle, England.

Newcastle, which is at the mouth of the Hunter River, was named in memory of Newcastle, England. It has deep water and thus can ship its coal to advantage. The state has valuable deposits of iron, copper, and tin. In 1912 the value of all minerals produced was approximately $50,000,000.

Sydney, the capital, is the oldest city on the con-

tinent, having been founded in 1788. It is situated on an arm of the sea called the Parametta River on the south side of Port Jackson. Port Jackson is one of the best harbors in the world. It is a part of a drowned valley and is large, land-locked, and deep.



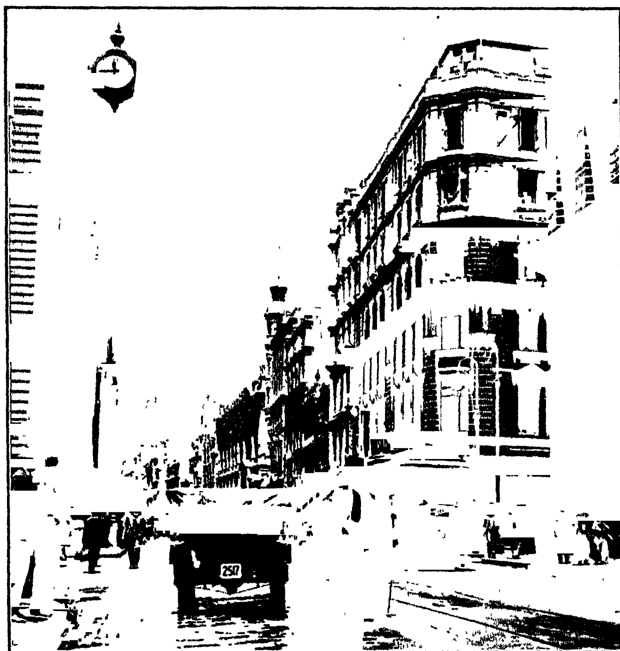
Courtesy Immigration and Tourist Bureau, Sydney.

FIG. 13. — Circular Quay, Sydney.

The entrance to the harbor is about one mile in width. Powerful lights, which are visible for many miles, guide the incoming vessels safely to the wharves. Many millions of dollars are now being expended in improving harbor conditions in Sydney.

Sydney is built upon the hills that slope down to the shore, and it has a very picturesque situation. The

older streets are narrow and crooked. As the underlying rock is of sandstone, most of the buildings are



Courtesy Immigration and Tourist Bureau, Sydney

Fig. 14. — George Street, Sydney.

constructed of this material. There are electric lights, electric cars, and all of the modern conveniences.

The mean annual temperature of Sydney is about the same as that of San Diego, California (63° F.); but its rainfall is about five times as great, averaging nearly

fifty inches yearly. Owing to the greater humidity, the heat is more oppressive than it is in dryer places.

Sydney is the railroad center of New South Wales. There are deposits of coal directly beneath the city as well as in the surrounding area. Thus, ships can be cheaply supplied with coal here.

As a wool market, Sydney ranks first in Australia, and it is one of the most important in the world. It is the one great port of New South Wales. Its trade is chiefly with the British Isles, for most of its exports are in demand there. The most important are wool, mutton, wheat, butter, wine, coal. Which one of these is not sent to the British Isles? According to the census of 1911, it was the largest city in Australia, having a population of 629,503. Name a city in the southern hemisphere that has a greater population. About one third of the total population of New South Wales is found in Sydney.

"City of laughing loveliness, Sun-girdled Queen
Crowned with imperial morning, bejeweled with joy,
Raimented soft like a bride, in virginal sheen,
Veiled in luminous mist, blushing maidenly coy
In shyly opening dawntide of youthful-sweet beauty: —
Earth, and Air, and the Heavens, and wondering Ocean salute thee."

— MARSHALL HALL in "Hymn to Sydney."

CHAPTER IV

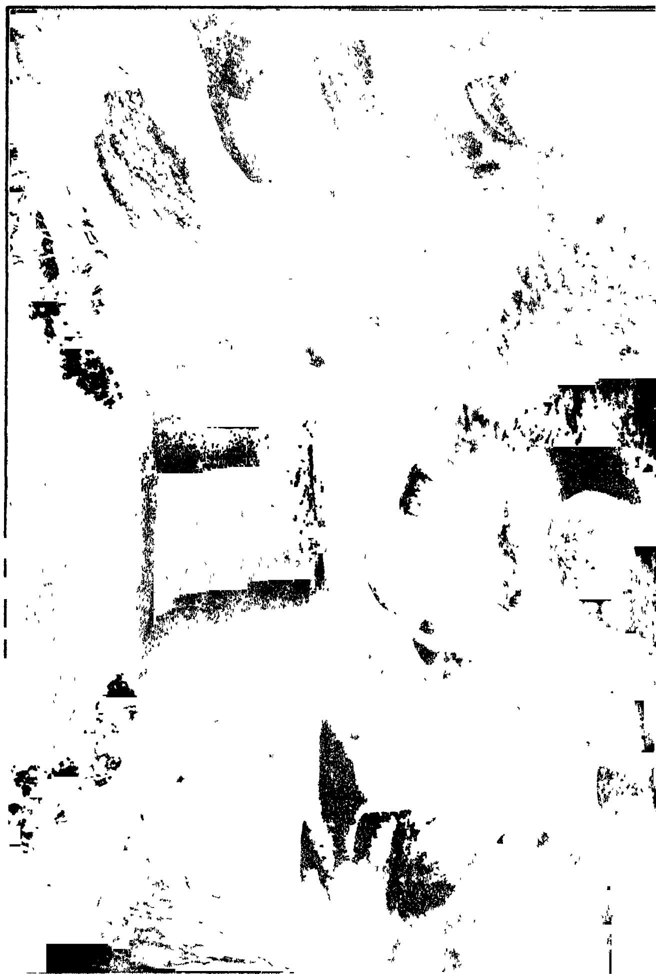
THE "GARDEN STATE"

VICTORIA is the smallest of the states on the mainland of Australia, yet its total population is second to that of New South Wales only. This is because the climate is cooler than it is farther north; the rainfall is, in a large section, sufficient for agriculture, and a great deal of the land is tillable. It is because Victoria is so well adapted to agriculture that it is often called the Garden State.

The mountains of Victoria are from fifty to seventy-five miles from the sea. Their highest peaks are a little more than 6000 feet in altitude and are snow covered for several months each year. The melting snow supplies considerable water to the streams.

The mountains divide the state into two climatic areas. In the southern the rainfall is greater than it is in the northern and, owing to the influence of the ocean, there is not so great a range in temperature. January and February are the hottest months.

Wheat farming, fruit growing, and dairying are important industries. In the dryer districts many sheep



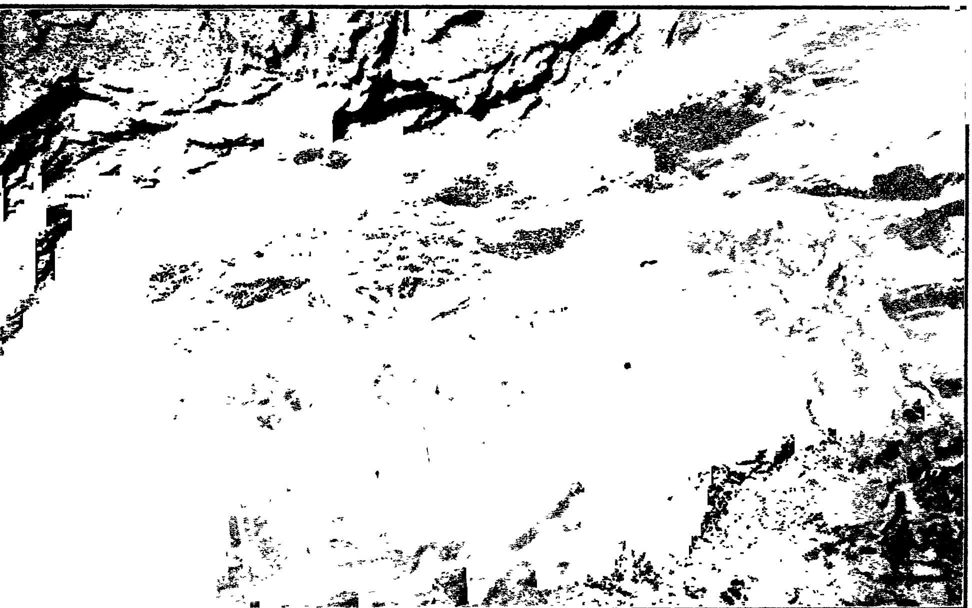
and cattle are raised. Gold, wool, meat, wheat, fruits, butter, and cheese are the important exports.



Courtesy F. T. A. Fricke, Government Representative from Victoria.

FIG. 16. — Delivering Cream to a Butter Factory in Victoria, Australia.

There is a great deal of mineral wealth in Victoria. The state has produced much more gold than has any other state in the Commonwealth. Ballarat and Sandhurst are both situated in rich gold-producing sections, and they owe their importance chiefly to this fact. Near Ballarat a nugget known as the "Welcome" was found. It was sold for about $50,000. In addition to gold, Victoria produces some silver, copper, tin, coal, building stones, and clays.



Courtesy F. T. A. Fricke, Government Representative from Victoria, Australia.

Fig. 17. — Gold Mining in Bendigo, Victoria, More than a Mile below Surface.

Victoria's great city is Melbourne. It is the capital and is situated upon a large bay called Port Phillip. A man named Guy Fawkner was the first settler. He built a house in 1835. At that time the place where the city now stands was covered by a forest.

A narrow entrance leads into the great deep bay. Melbourne, which is about forty miles from the entrance, is located at the mouth of the Yarra River. The city has an outer harbor at Williamstown, about five miles distant, where the largest ships load and unload; but vessels drawing twenty-two feet of water can reach the city.

The view which one gets of Victoria's capital in approaching by water is very attractive. The city is built upon rolling hills, and beautiful homes are seen along the shores of the bay. Many ships are at the wharves, loading and unloading their cargoes. About ninety per cent of the trade of Victoria passes through this port. Melbourne draws its water supply from mountains known as the Plenty Ranges, some sixty miles away. The supply is pure and abundant.

Although Melbourne is a young city it has splendid buildings, very broad streets, and beautiful parks and gardens. It is because of these things that it is sometimes called "Melbourne, the Magnificent." In population it is the second city on the continent, having, in 1911, nearly 600,000 people.

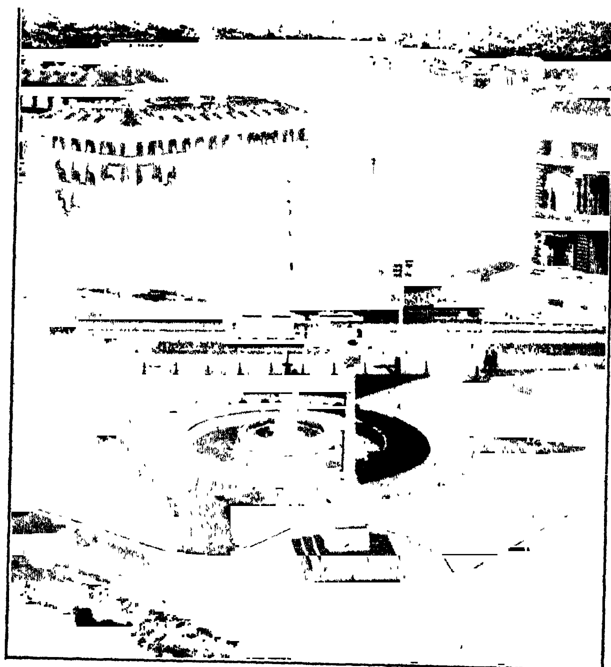


Fig. 18. — A View of Melbourne.

CHAPTER V

SOUTH AUSTRALIA

THE state of South Australia has a very great area but a relatively small population. The small population is due to the fact that a large part of the country is quite dry. Most of the people live in the southern part of the state, because there the rainfall is most abundant.

The larger part of South Australia is low land, but near the northern border the Musgrave and McDonnell ranges reach an altitude of several thousand feet. Some of the mountains are much-eroded volcanoes.

Like the other states of the Commonwealth, South Australia is deficient in permanent streams. It has a number of lakes, most of which are dry for a part of the year. Lake Eyre, the largest, is about thirty feet below the level of the sea.

The rainy season occurs between March and July, but June and July are the wettest months. In the neighborhood of Lake Eyre, the average annual rainfall is only about five inches. At Adelaide the average annual rainfall, covering a period of more than fifty

years, is twenty-one inches. As the rainfall in the interior is so slight, agriculture is almost entirely confined to the southeastern coastal region. A very small part of the total area is tilled.

Wheat is an important crop, for this can be grown successfully in a rather dry region. Considerable wine is produced and some is exported. The sheep industry is the chief one, however. Mutton and wool are exported in large amounts. In 1911 there were in the state more than 6,000,000 sheep.

Copper was discovered in 1846. This discovery attracted many people to South Australia.

The one large city in the state is Adelaide, the capital. It was founded in 1836 and named in honor of Queen Adelaide, the wife of William IV of England. The city is situated on a plain about five miles from the sea, and is divided by the Torrens River into two parts. The south side is the business section of the city, and the north side is largely residential. Just east of the city Mt. Lofty rises to the altitude of 2400 feet.

Adelaide has a number of ports. To the northwest is Port Adelaide, to the southwest is Glenelg, and to the south Victor Harbor. A railroad connects the capital with the town of Morgan situated on the Murray River.

The streets of Adelaide are broad, and from the city



Photograph from Janet M Cummings

Fig. 19 — King William Street, Adelaide, South Australia.

a good view can be had of the Gulf of St. Vincent to the west and of hills on the south and east. The water supply is obtained from reservoirs on the hills. The chief manufactures are woolen and leather goods, iron and earthenware. In 1911 the population of Adelaide was 189,646.

CHAPTER VI

WESTERN AUSTRALIA

THE map shows you that Western Australia extends entirely across the continent from north to south. Use the scale and find how many miles this represents. The area of the state is 975,920 square miles. It is nearly five times as large as France, and yet its total population in 1912 was only about 300,000. The vast expanse of desert in the interior of Australia cuts off communication by land between Western Australia and the other states. This is a serious disadvantage.

The Darling Mountains extend parallel to the western coast. Although their highest peaks are only about 1500 feet in altitude, they take considerable moisture from the west winds. The Stirling Mountains north of Albany reach a greater elevation.

The latitude of the state is 13° to 35° south, and therefore most of the area is in the torrid zone. The northern part is quite warm, but the southern part has a very agreeable climate. February is the warmest month.

The rainy season is from May to September. The southwestern part of the state is the wettest. In some



Courtesy Immigration and General Information Bureau, Perth.

FIG. 20. — A Vineyard in Western Australia.

places the average annual precipitation is 50 inches or more. At Perth the average is 33 inches, but in the north it is much less.

Owing to the tropical climate, oranges and lemons thrive along the west central coast in a belt extending eastward from the sea for a distance of thirty to forty miles. In the southwestern part of the state apples, pears, peaches, plums, cherries, figs, and grapes do well. Fruits are exported to the British Isles in considerable quantities, the time required for transportation being several days less than that from the other states.

Wheat is the chief farm crop; but barley, oats, corn, and potatoes are grown. Rabbits do much damage to crops, and rabbit-proof fences many miles in length have been built east of the cultivated area.

Western Australia produces much gold and in addition some silver, copper, lead, iron, and tin. One of the richest gold fields in Australia is located about 400 miles east of Perth. The rich deposits of gold led to the development of the towns of Coolgardie and Kalgoorlie and other less important places. In addition, the gold resulted in the construction of a railroad from Perth to the gold fields.

In 1891 Coolgardie was founded. In 1911 it had a population of about 2000. Kalgoorlie is two years younger than Coolgardie, but in 1911 its population exceeded 8000. As these and other towns developed,

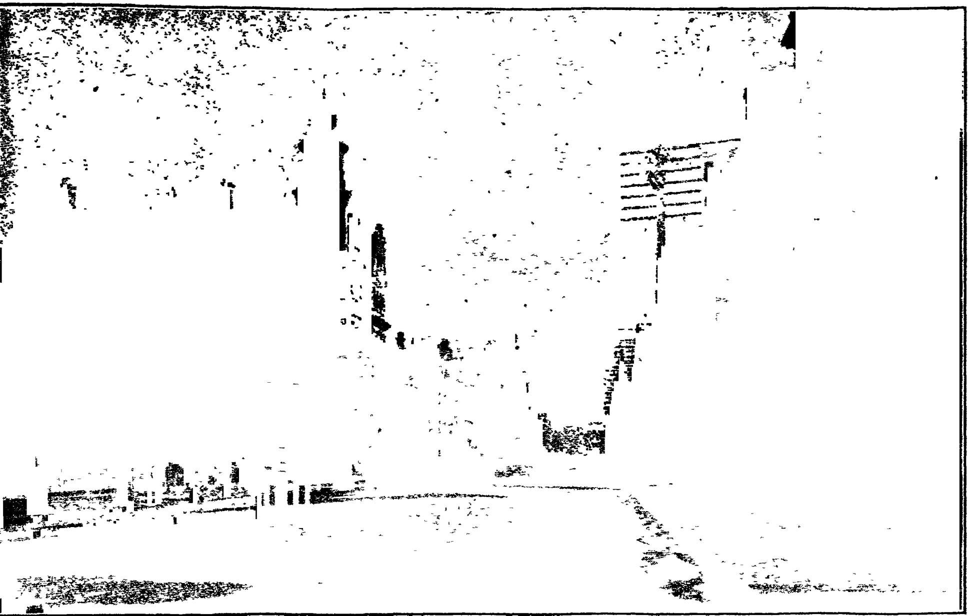


Courtesy Immigration and General Information Bureau, Perth.

Fig. 21. — Reservoir which furnishes Gold Fields with Water Supply.

it was seen that an adequate supply of water must be obtained from some source. It was decided to pipe water from a point near Perth, some 300 miles distant. Through a system of pipes water is now pumped to thirty-six towns. The work was commenced in 1896 and completed in 1903. Water is stored in an immense reservoir. This is a striking illustration of the fact that man often overcomes unfavorable geographical environment. Can you name another locality where water is piped a long distance across a desert?

Perth, the capital of Western Australia, is situated upon the Swan River twelve miles from the sea. At the point where the city is located, the river expands into a lake-like form. As the river does not admit the largest ships, Perth has an outer port at Freemantle. It has rail connections with this port. The city obtains its water supply from the Darling Mountains about twenty miles distant. At Perth is located a branch of the Royal Mint. In the neighborhood of Perth there are a number of towns constituting a metropolitan area, the total population of which was, in 1911, about 100,000.



Courtesy Immigration and General Information Bureau, Perth.

Fig. 22. — St. George's Terrace, Perth.

CHAPTER VII

NORTHERN TERRITORY

UNTIL January 1, 1911, South Australia extended entirely across the continent from south to north. The northern part of this vast area is now called Northern Territory. Its relation to the Australian states is similar to the relation of Alaska to our states.

Although Northern Territory is twice as large as Texas, it is almost entirely an undeveloped country. The total population was only about 5000 in 1911, less than 1500 of whom were white persons. Owing to the high temperature and the great humidity, the climate in the northern part is not favorable to white laborers. The rainfall at Port Darwin averages about sixty-three inches per year, and the temperature 82° F. In the southern part there is so little rain that agriculture cannot be extensively carried on.

Because of the rain and the high temperature there are extensive forests in the north. In the future these will be of much value. Rubber will probably be an important product. The climatic conditions favor the growth of sugar cane, and much sugar could be produced if labor were available. The people of

Australia do not desire other than white labor, however.

There is considerable gold in the territory, and mining is one of the leading industries. Many people are engaged in cattle and buffalo raising, and some in pearl and turtle fishing. The buffaloes are raised for their hides, which are used in the manufacture of belts.

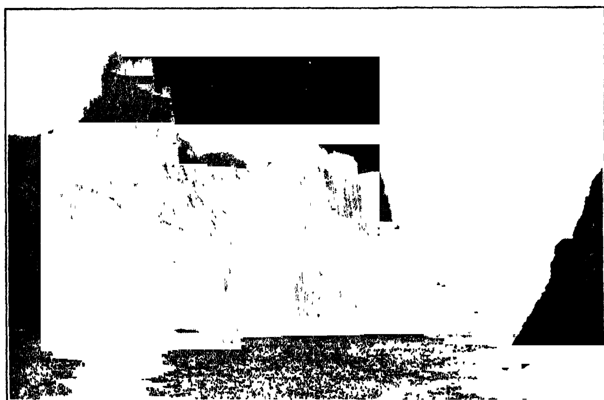
In 1872 a telegraph line connecting Adelaide and Port Darwin was completed. This line is 1700 miles long. It was very difficult and costly to build, because so much of the country through which it extends is a desert. The first poles, which were of wood, were destroyed by white ants; and poles of iron were substituted.

There are no large towns in the territory. Darwin, the capital, and Palmerston are the most important. A railroad is to be built which will connect Port Darwin with the railway system of South Australia.

CHAPTER VIII

TASMANIA

THE waters of Bass Strait, more than 100 miles in width, separate the mainland of Australia from its smallest state, Tasmania. The island was discovered



Courtesy Immigration and Intelligence Branch, Department of Agriculture and Stock, Hobart.

FIG. 23 - Cape Pillar, Tasman Peninsula.

by the Dutch navigator Tasman in 1642, but he did not know that the land was an island. The first white settlers were English convicts, and from 1803 to 1853

Tasmania was an English convict station. This island was once called Van Diemen's Land.

Tasmania is a country of beautiful scenery. Much of the island is quite mountainous. Not far from the western coast are mountains, the highest peaks of which are between 4000 and 5000 feet in altitude. In the central part there is a plateau from 2000 to 3000 feet above sea level. The Great Western Mountains form the northeastern boundary of the plateau.

In earlier times volcanoes were active in Tasmania and much lava was poured out upon the surface. Through the process of weathering a great deal of the lava has been converted into a fertile soil.

The rivers are short and swift and will sometime furnish much power for manufacturing. The most important are the Derwent in the south and the Tamar in the north. Other smaller but beautiful streams are the Mersey, Arthur, Gordon, and Huon. On the plateau there are many beautiful lakes. Great Lake, Arthur Lake, Lake St. Clair, and Lake Echo are the most important. The rivers, waterfalls, and lakes, together with the delightful climate, attract many tourists to the plateau.

Tasmania is situated in the belt of the prevailing westerlies. Owing to its position it is cooler than is Australia and it is well watered. Nowhere do crops fail because of lack of water. Except upon the highest

mountains, there is no really cold weather; and the influence of the ocean prevents great extremes of temperature. During the summer, which is in December, January, and February, the climate attracts many people from the mainland of Australia.

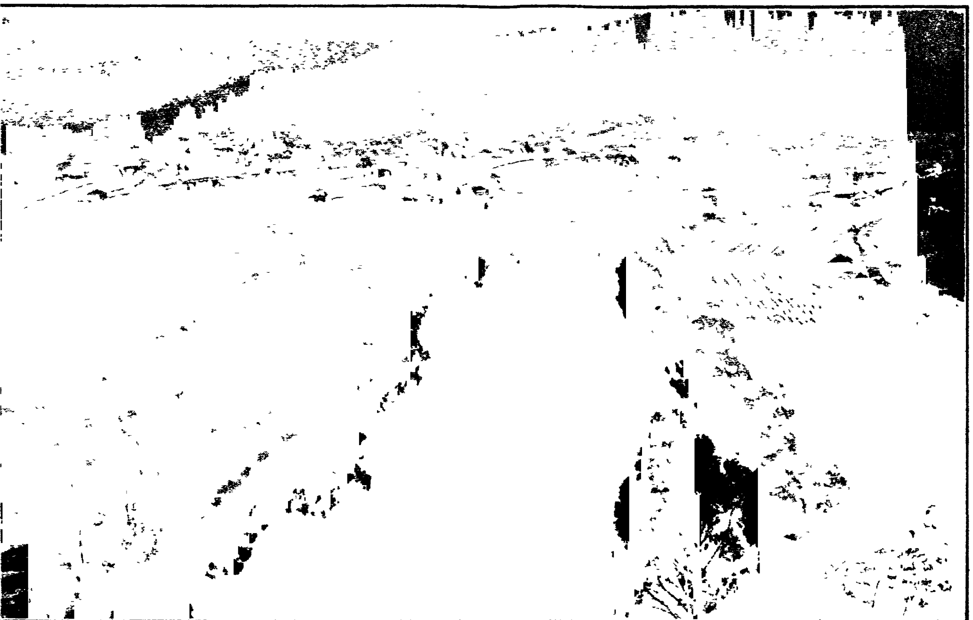
As the mountains have a general north to south trend, the western part of the island has a much heavier



Courtesy Immigration and Intelligence Branch, Department of Agriculture and Stock, Hobart.

Fig. 24. — An Apple Orchard in Southern Tasmania.

rainfall than occurs on the eastern side. At several points on the west coast the average annual rainfall exceeds one hundred inches. As a result of the abundant rainfall and moderate temperature, there are valuable forests, from which lumber is one of the exports. The favorable climatic conditions cause the luxuriant growth of ferns and flowers.



Courtesy Immigration and Intelligence Branch, Department of Agriculture and Stock, Hobart.

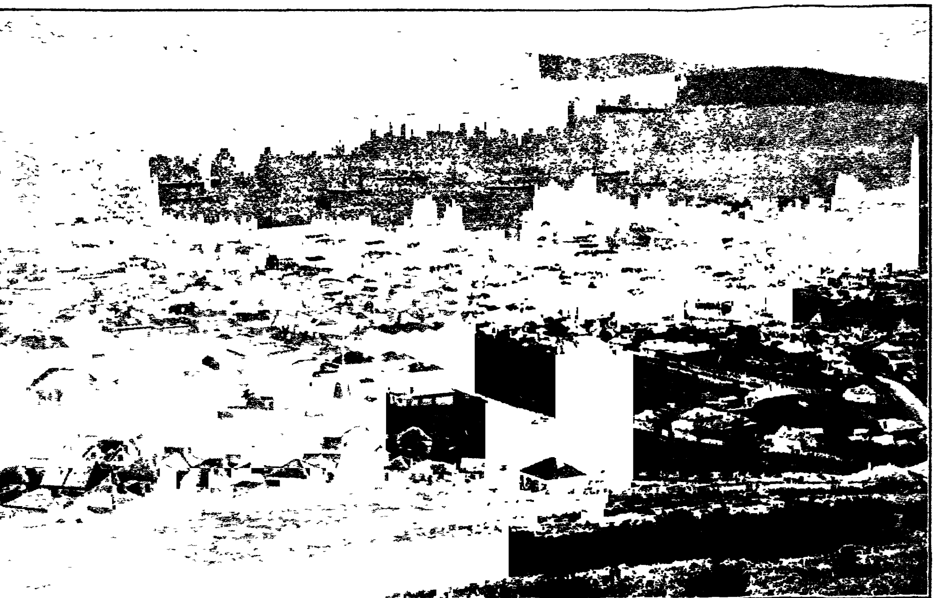
FIG. 25. — In the Valley of the Derwent River.

The climate of Tasmania is advantageous to agriculture. Much of the land is too rugged for farming, however. In the fertile valley of the Derwent, hops and apples are grown extensively. The most celebrated apple district is the Huon valley in the southern part of the island. Much of this fruit is exported to England. On the northwest coast and in the valley of the Mersey, potatoes are extensively grown.

In the Midland District, where the surface is too rugged to encourage agriculture, large numbers of sheep and cattle are pastured. The quality of the grass leads to the production of a very excellent grade of mutton, much of which is exported in refrigerator ships to the British Isles. In 1910 there were 1,734,000 sheep upon the island.

Of mineral wealth Tasmania has considerable. Gold, silver, lead, copper, tin, iron, and coal are produced. More tin is mined in Tasmania than on the mainland of Australia.

Hobart, the capital, is situated upon the Derwent River about twelve miles from the coast and close to the base of Mt. Wellington. The largest ships can anchor in its harbor, owing to the great depth of the water. This gives the city a great commercial advantage. In the city are flour mills, railroad and bridge works, tanneries, and establishments for the making of jam. Its population in 1911 was about 40,000.



Courtesy Immigration and Intelligence Branch Department of Agriculture and Stock, Hobart

FIG. 26 — Hobart from Lansdowne Crescent.

Launceston, which is in the northern part of Tasmania, on the Tamar River, is the railroad center of the state. From this point a railroad leads south to Hobart and other roads lead east and west. The city is some forty miles from the sea, but the river is navigable to it. The scenery on both sides of the Tamar is beautiful. Mountains practically surround Launceston, giving it a very picturesque situation. It is the second city in size in the state, being about one half as large as Hobart.

"But always I would wish to be where the seasons gently fall,
On the Further Isle of the Outer Sea, the last little isle of all;
A fair green land of hill and plain, of rivers and water-springs,
Where the sun still follows after the rain, and ever the hours have wings,
With its bosomed valleys where men may find retreat from the rough world's way. . . .
Where the sea-wind kisses the mountain-wind between the dark and the day."

— Ernest Currie.



Courtesy Immigration and Intelligence Branch, Department of Agriculture and Stock, Hobart.

Fig. 97. — Launcestown Tasmania.

CHAPTER IX

NEW ZEALAND

HAVE you ever wondered how New Zealand got its name? Zealand, or Zeeland, is a name applied to a part of Holland; and Tasman, the discoverer of these islands, called them New Zealand. The Dutch did not colonize the country, and in time the English took possession.

You remember that the zero meridian passes close to London. The meridian of 180° is but a short distance east of the most easterly part of New Zealand. These islands are, therefore, on just the opposite side of the earth from the British Isles. New Zealand is not nearly so far south of the equator as the British Isles are north of it. The latitude of the city of Wellington is about the same as that of the city of Chicago.

Although the islands extend in a general north-to-south direction for a distance of about 1000 miles, the influence of the surrounding water in large part overcomes the effect of latitude upon temperature. No point in the islands is more than seventy-five miles from the sea, and, therefore, the climate is oceanic in character.



Photograph from Janet M. Cummings.

Fig. 28. — Forest Scene in New Zealand

New Zealand is in the west-wind belt and is well watered. As the main mountain axis trends from northeast to southwest, precipitation is much more abundant west of the mountains than east of them. On the western coast the rainfall amounts in some places to more than one hundred inches per year. At Christchurch, on the east coast, the average annual precipitation is but twenty-five inches.

As a natural consequence of the plentiful supply of rain, forests clothe much of the land. This, of course, applies especially to the part west of the mountains. The forests of pine, beech, and birch are very valuable. Tree ferns are numerous, some of them being fifty feet tall. Excellent pasturage is another result of the abundant supply of moisture.

Of animals, New Zealand has few that are native. The English have introduced deer, rabbits, and other animals. Owing to the isolation of the islands, some of the animals were not found elsewhere. An interesting illustration is the Moa, a bird now extinct, which was probably ten feet tall.

The mountainous character of much of the country, together with the extent of forest area, has prevented agriculture from developing as rapidly as it otherwise would. Considerable wheat is grown, however, and the yield per acre is larger than it is in Australia or the United States. Dairying is important, but mut-



Photograph from Janet M Cummings.

FIG. 29. — Felling Trees in New Zealand.

ton and wool are the chief sources of wealth. Most of the good pasture land is located on the east slope. This is an important reason for the population being chiefly on this same slope.

Of minerals, gold is the most important. Its discovery caused a rush of people to the west coast.



Courtesy Department of Tourist and Health Resorts, Wellington.

Fig. 30. — Maori Girls, New Zealand.

Towns grew very rapidly as they did in the western part of our country. Some of them are now of very little importance. Considerable coal exists on the western slope of South Island. Silver, copper, iron, and tin are mined.

When the English first settled in New Zealand, they

found the islands in the possession of a race of people called the Maoris. They were very different from the natives of Australia. They were well developed physically and had made considerable progress intellectually. Although they were great fighters, they tilled the soil, carved wood, were good seamen, and made mats and garments from a native fiber.

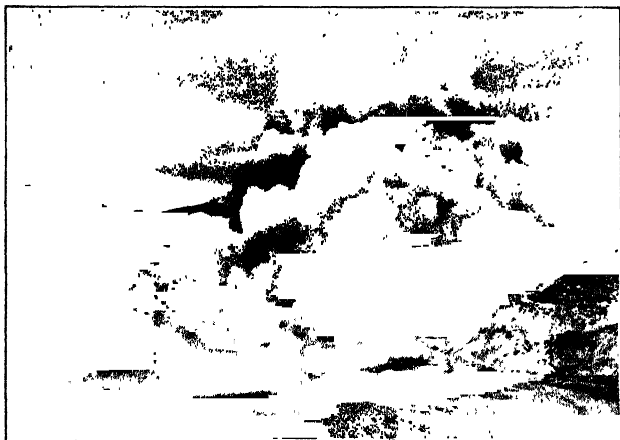
As in Australia, the natives have diminished greatly in numbers since the whites came among them. The Maoris are now most numerous in North Island. Some of them are very well educated. They own property and hold office just as do the white people.

North Island

The central and southern parts of North Island are very mountainous. The general direction of the ranges is from north to south. West of the main axis is a volcanic belt. This is largely a plateau where pumice is so plentiful that the region is sparsely populated. Mt. Ruapehu, on this plateau, is a little more than 9000 feet in altitude. It is an active volcano and extends above the snow line. Upon the summit there is a small warm lake. Tongariro is another active volcano in this same section of the island close to the shore of Lake Taupo. Near the west coast is Mt. Egmont, an extinct volcano. It is very symmetrical, rivaling Fujiyama in beauty. Although

not so high as the Japanese mountain, its top is always snow covered.

New Zealand is one of the three geyser regions of the world. Name the other two. Good roads have been constructed to the geysers and hotels established.

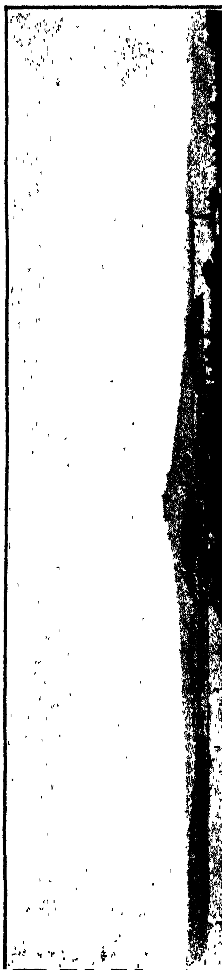


Courtesy Department of Tourist and Health Resorts, Wellington.

FIG. 31. — Waimangu Geyser in Action.

As the government controls both the roads and the hotels, prices are moderate and many people visit the geysers. Waimangu Geyser came into existence in 1901, and ceased acting in 1903. At times it spouted water to the height of 1500 feet. As in our Yellowstone Park, hot springs are very numerous.

Because of the abundant rainfall already spoken





Courtesy Department of Tourist and Health Resorts, Wellington.

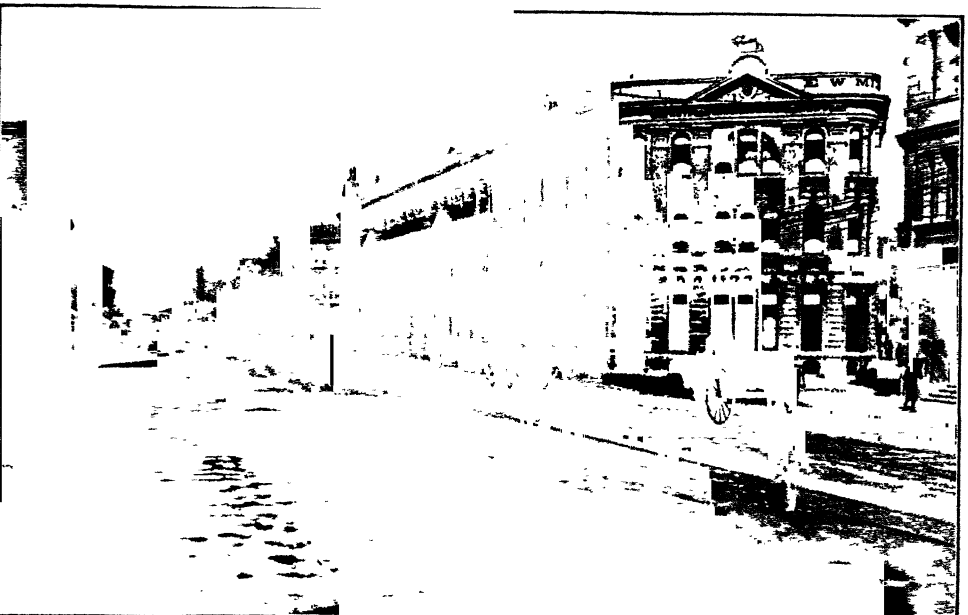
FIG. 32. — Auckland Harbor from St. Mathew's Tower.

of, rivers and lakes are plentiful. They add much to the attractiveness of the island. The Wairoa River, the largest, is navigable for forty miles. Most of the rivers are, of course, short and swift. Sometime they will be very valuable because of the power which they will furnish. The chief lake of North Island is Lake Taupo.

The principal cities are Auckland and Wellington. Auckland, the largest city in New Zealand, has a population, including its suburbs, of about 100,000. It is in the northern part of the island, on an isthmus ten miles wide, which gives it water frontage on two sides. It is built upon hills, and near by are some ancient volcanic mountains. In the top of one of these, a reservoir has been made.

The city is supported by a region rich in resources. To the north are valuable forests of pine and kauri. As a result, Auckland exports timber to Australia and kauri gum to the United States. South of the city, dairying and stock raising are important. These industries lead to the exportation of butter, cheese, frozen meat, and wool. Sugar is imported from Fiji and refined in Auckland. Other important industries are shipbuilding, the tanning of leather, and the manufacture of boots and shoes, rope, brick, tile, pottery, and iron goods.

Wellington, the capital of New Zealand, has a popu-



Courtesy Department of Tourist and Health Resorts Wellington

FIG 33 — A Street Scene in Wellington

lation of about 75,000. The city is at the southern extremity of the island, on the shore of Cook Strait. Because of its central position with reference to New Zealand, it has become important as a distributing center. It has a deep and well-protected harbor. Most of the city is located upon the low land close to the sea, because hills surround the capital. As the hills are an obstacle to both building and transportation, some of them have been cut down. Many sheep and cattle are raised in the vicinity; hence wool, frozen meat, and dairy products are exported, and woolen goods are manufactured. In the city are foundries, sawmills, soap plants, boot and shoe factories, and match factories. The manufacturing is chiefly for the home market.

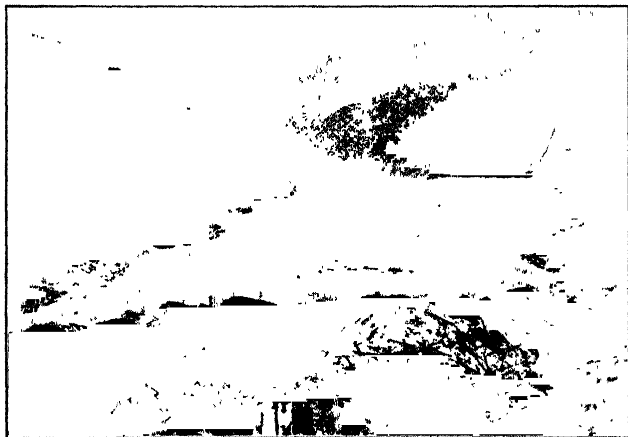
South Island

South Island is the larger of the two chief islands. Its main mountain axis is close to the western coast. Several of its peaks are more than 10,000 feet in height, and Mt. Cook, the most lofty, rises to the altitude of 12,349 feet.

In these mountains, which are called the Southern Alps, there are many large glaciers. Owing to the very heavy precipitation, the snow line on the western slope of the mountains is much lower than it is on the eastern slope. Some of the glaciers extend right into the

timber. West of the axis is the beautiful Franz Josef Glacier. On the east slope are the Tasman, Murchison, and Godley, all immense in size.

The lofty mountains cause a very heavy precipitation on the west slope. A result of this is seen in the



Photograph from Janet M Cummings.

Fig. 34. — Franz Josef Glacier.

dense forests that yet cover much of the area. These forests, together with the mountain barrier, for a long time retarded the settlement of Westland, as the western slope is called. It is not densely populated to-day, but the discovery of gold near the mouth of the Hokitika River in 1865 led to a rush of people into the region. Although much of the excitement of the early days has

died out, there is a great deal of gold mined in this district.

The timber is now one of the greatest resources of Westland. It is cut for the home markets, and some is exported. The Kauri pine grows to an immense size. In some cases the logs are shot down the slopes in slides made of logs, and in some cases they are floated down streams. The turpentine which exudes from these trees forms a gum. When the trees fall and decay, the gum remains in the earth. The best of this Kauri gum, as it is called, is practically colorless. Inferior grades are the color of amber. The buried gum is found by pushing sharp iron rods into the ground. When a piece of gum is struck, it is dug out. Some of the pieces are not larger than hen's eggs and some weigh many pounds. The gum is collected from living trees also. It is used in making certain kinds of varnish, lacquer, and linoleum.

The west coast has beautiful fiords like those on the coast of Norway. There are waterfalls of great height, and lakes and streams that delight all who see them. Lake Wakatipu, some fifty miles long, has wooded islands; and there are mountain streams flowing into it. In places it is 1000 feet deep, but the bordering mountains rise 8000 feet above its blue waters.

As South Island has the highest mountains, so also

it has the largest plain in New Zealand. This is the Canterbury Plain, which slopes from the mountains eastward. It is about 150 miles long and 40 miles wide. Having only a moderate rainfall, it had little forest area; hence the white people rapidly settled upon it. It was easy to build roads, and agriculture was profitable.

The city of Christchurch owes its importance, and we might say its existence, to the plain. It is located upon Avon Stream and has a population of about 80,000. Its port is Littleton, with which it is connected by means of a tunnel.

Christchurch has rail connections with the north end of the island and with Greymouth in Westland. The road connecting the two slopes leads up the valley of the Waimakariri River to Arthur's Pass and then down the Teremakau River. Owing to the fertility of the country and the beauty of the Westland scenery, it is a much-traveled road.

On the southeast coast is Dunedin on a landlocked bay. It has fine streets and substantial business blocks of stone. The population, numbering about 65,000, is chiefly Scotch. It has woolen mills, and manufactures clothing and boots and shoes. It is the chief manufacturing center in the islands. The city owns the lighting, power, and water plants, the street railways, and slaughterhouses. Much meat,

wool, grain, potatoes, dairy products, and gold are sent from the tributary country into Dunedin.

Although the wonderful scenery and the delightful climate of New Zealand are attracting people from all parts of the world, its political conditions are equally attractive. Probably in no other country are the rights and privileges of the people more carefully protected. When it was found that the land was falling into the hands of a few capitalists, the government bought back large tracts that had already been disposed of. To-day only small tracts of land are sold to an individual and only to those who are actually to till the soil.

The railroads are in the hands of the government. As a result both freight and passenger rates are low. Women vote and hold office. All difficulties between capital and labor are settled by arbitration. In many ways New Zealand, although so young, is a model for the other countries of the world.

CHAPTER X

NEW GUINEA

In the year 1545 a Spanish explorer, finding that some of the natives of New Guinea resembled the people of Guinea, on the west coast of Africa, gave to the island its present name. The island is sometimes called Papua; and its native inhabitants, Papuans.

Torres Strait, which is shallow and only one hundred miles in width, separates Australia from New Guinea. In the strait there are a number of islands. There are, therefore, many resemblances between the plant and animal life of the northern part of Queensland and the southern part of New Guinea. As you know, southeastern New Guinea is now a part of the Commonwealth of Australia.

New Guinea is a little larger than Borneo. Like Borneo it has not yet been thoroughly explored. A mountain system extends through practically the center of the island in a southeast-to-northwest direction. In the western part of New Guinea, south of the great Gulf of Geelvink, the mountains are called the Charles Louis Mountains. Some of the peaks in this part of the system rise above the snow line. The

mountains in the southeastern part are, some of them, more than 10,000 feet in altitude.

Being entirely within the torrid zone, New Guinea has a warm climate. Between what parallels of latitude is the island situated? When summer prevails in the northern hemisphere, the southeast trade winds blow. What part of the island would then receive most rainfall? When it is summer in the southern hemisphere, the northeast trade winds blow. The seasons, therefore, change with the shifting of the winds.

Forests clothe the land from the shore to the tops of all but the highest mountains. In the dryer parts there are many eucalyptus trees. The bread fruit, mango, banana, cocoanut, sago palm, and other tropical forms of vegetation abound.

Some of the animals are like those in Australia. The kangaroo and the dingo are examples. Wild pigs are numerous and are eaten by the natives. Among birds we find the bird of paradise, cockatoo, parrot, a very beautiful pigeon, and the cassowary. There is a wonderful butterfly with a golden body and a crimson breast. It is called the bird-winged butterfly. Specimens have been caught that measured seven inches from tip to tip.

The chief occupations of the men are hunting, fishing, and canoe making. They also spend much time in fighting. The boats are hollowed-out logs. They

have outriggers to prevent them from capsizing, and some have sails made of grass mats. Large canoes, forty or fifty feet in length, are made for trading. The men make their own weapons, which consist of bows and arrows, spears, daggers, and blowpipes; and they carve wood quite skillfully.

The mineral resources of the island have not been extensively developed. Deposits of gas, petroleum, coal, and copper are known to exist.

The women cultivate rice, bananas, corn, and tobacco. They make vessels of clay, some of which are used for carrying water and some for cooking. They weave mats of grass upon which people sit, for there are no chairs in the houses.

Like the natives of Borneo, those of New Guinea wear little clothing. They are dark brown in complexion, and they have kinky hair. Some travelers have compared the hair of the people to mops. Combs of bamboo are worn by both men and women. The natives of New Guinea do not believe that death results from natural causes. Therefore, when a person dies, they think that an evil spirit or some enemy has caused the death.

The dwellings are very much like those of Borneo. You will learn about these later. In some cases houses are built in tree tops as a protection. The owners ascend and descend by means of ladders.

Three European nations have divided New Guinea among themselves. As has been said, Great Britain claims the southeastern part, Germany lays claim to the northwestern section, and Holland to the western



FIG. 35 New Guinea Houses Built in Trees

part. The British portion is the best developed. Because of the nature of the climate the natives will have to do most of the work, but the white man can direct it. Port Moresby, on the east shore of the large bay of the same name, has deep water and is connected with Australia by cable.

CHAPTER XI

CELEBES

When you look at a map of Celebes, the peculiarity of the outline of the island at once attracts your attention. Four mountainous peninsulas radiate from a common center. These peninsulas, as well as the central mass of the island, are still further indented by small bays and projections. A subsidence of the island has caused this irregularity of outline.

The central part of the island consists largely of hills and mountains. Some of the peaks are believed to be more than 10,000 feet in altitude. Volcanoes have been active in the past, and earthquakes are of frequent occurrence. There are no marsh lands. Owing to its favorable position geographically and its altitude, Celebes offers a most healthful climate.

The rivers are short and flow rapidly and are therefore of little value from the standpoint of navigation. Lakes are numerous, the largest ones being in the southern part of the island.

The climate is hot; yet, owing to the irregularity of the coast line, the sea greatly modifies the tempera-

ture. There is much rain, and violent thunderstorms are common.

In the parts of Celebes that face Australia the plants are closely related to those of that continent. In other parts there is less resemblance. The palm, camphor, cinnamon, nutmeg, clove, and cocoanut are among the trees. The forest trees much resemble those of the adjacent islands.

Among the animals found are the buffalo, pig, deer, boar, and the tailless baboon. In the eastern part are marsupials similar to those in Australia. The bird of paradise is a very interesting form of animal life. The plumage of the female is unattractive, but that of the male is very beautiful. The plumes are used in many countries to decorate hats.

The soil is largely decomposed lava and is very fertile. Agriculture is not highly developed, however. Some coffee and tobacco are grown. As most of the people live close to the coast there is considerable fishing and some trading by sea. The women are quite skillful in weaving and embroidering, and cotton clothes are made.

Makassar on the peninsula of the same name in the southern part is the capital. It is a city of about 25,000 population. The business streets are narrow and lined with warehouses. There are few Europeans, but many Chinese in the city. It is the most impor-

tant native commercial center in the East Indies, as much of the trade of the islands east of Celebes passes through it. Makassar has been called, on account of its importance, the Hong Kong of the Dutch in the East Indies. It exports copra, rattan, oils, tortoise shell, pearl, spices, and skins of the birds of paradise. Other articles of export are rice, nutmegs, cloves, dammar, copal, totara, and trepang. The totara is a tree the wood of which is used in making furniture.

Near the northern end of the northern peninsula is the city of Menado. It is less than one half as large as Makassar but is situated upon a fine harbor. Back of the city rise mountains. Avenues lined with beautiful trees extend from the shore towards the mountains. The Europeans live in a quarter by themselves. Most of the houses have thatched roofs.

Menado is very important as a copra-exporting center. The commodity is shipped to most of the countries of Europe. In addition to copra, coffee, sugar, spices, and rattan are exported.

The native inhabitants of Celebes are vigorous and quite intelligent. Those near the coast have made most progress because they have come in contact with one another and with people from other islands and from more distant parts of the world. In the interior much of the energy of the men is devoted to fighting.



Fig. 36. — Natives of Celebes Carrying Resin.

The natives are dark in color. They are quite graceful in their movements. Considering the area of the island, the population is sparse.

The Portuguese were the first Europeans to settle in Celebes, but since 1660 the Dutch have been in possession. They treat the natives justly, and the latter are loyal to the Dutch. Although the pagan and Mohammedan religions prevail, many tribes have accepted the Christian religion.

As in Java, the roads are excellent. They are kept in repair by the natives. Every able-bodied man must, during each year, give several days to working upon the roads. The plan is similar to one formerly followed in many of our states.

The coffee industry is rapidly developing in Celebes. The rich volcanic ash, scattered over the foothills, furnishes the finest soil for coffee growing. The same soil produces much rice and Indian corn, upon which the native workers subsist.

Forests are cleared away and young coffee trees planted in sheltered places, surrounded by small trees that are allowed to grow for protection. The seedlings are then transplanted from these nurseries. The trees grow to a height of about six feet. The top is then cut away, the strength going to the side branches that bear the fruit.

In north Celebes, where the chief coffee plantations are found, fine coffee berries mature to a height of 4000 feet above sea level. Rats and mice are very fond of the red berries and gnaw the shoots of the

trees until the berries fall. The Dutch farmers guard against these invasions by allowing cats to run wild. The natives use the cats as food, however; and the Dutch are frequently forced to deal severely with the natives.

CHAPTER XII

BORNEO

THE island of Borneo is one of the little known parts of the world. Dense forests, a climate that is very detrimental to white people, and the treachery of the natives have combined to prevent thorough exploration. Borneo is much larger than France, yet the population of the city of Paris is several times that of Borneo.

The island extends but a few degrees north and south of the equator. Except upon the most lofty mountains, the temperature is, therefore, high at all times of the year. The ocean moderates the heat considerably, however. The average annual rainfall is about 75 inches, but in some districts it is twice as much as this.

Where high temperature and abundant rainfall occur, vegetation grows luxuriantly. Practically all of Borneo is forested. Vines spread from tree to tree, and ferns and orchids are numerous. Some of the trees furnish valuable timber; some supply gums; some resin; and others supply food. Comparatively little use is made of the forest products, however,

because roads are lacking and the people are not sufficiently progressive.

One of the most useful trees is the sago palm. This, with the expenditure of very little labor, furnishes an immense amount of food. The tree is cut down and the pith washed out by means of running water. The sago settles, hardens, and will keep almost indefinitely. From it cakes are made. Much sago is exported from Sarawak.

You remember that the bamboo is of great use in China and Japan. The people of Borneo use it extensively also. It furnishes posts for the houses and is used as flooring. Bridges and fences are constructed from it. Water is carried and rice is cooked in sections of the bamboo stems.

The large amount of rain that falls in Borneo gives rise to many streams. Most of them carry large quantities of sediment, which they deposit in the deltas at their mouths. Much of the island is fringed by swamps, and these hinder the construction of roads and cause the climate to be unfavorable. The natives have felled trees across the streams, and these serve as bridges. Some of the rivers are navigable for short distances. The Barito, in the southern part, is the most valuable in this respect.

The central part of the island is hilly, and there are some lofty mountains. Few of the high peaks have

been ascended by white men. Kinibalu, in British Borneo, is said by some travelers to be more than 13,000 feet in altitude. So far as is known, there are no active volcanoes.

The map shows you that the main mountain axis trends in a northeast-to-southwest direction. From this axis several ranges radiate. Were the island to subside a few hundred feet, the ocean would flood the valleys between these ranges. Borneo would then have an outline similar to that of Celebes.

In the forests of Borneo there are many wild animals. Among them are found the elephant, rhinoceros, panther, deer, crocodile, and orang-outang.

There are few Europeans in Borneo. Most of the natives are Dyaks. As has been said, they are not highly civilized. They grow some rice and bananas, but Nature provides food so bountifully that the people do not need to labor much to secure enough to eat.

The Dyaks are dark in complexion and have straight black hair. The men do not wear beards as they do in most countries. They carefully pull out the hairs that appear upon the face. Sometimes the eyelashes are pulled out. We wish to keep our teeth clean and white, not only for appearance' sake but to preserve them. The Dyaks consider black teeth an ornament. The teeth are discolored by chewing the betel-nut. Sometimes the front teeth are filed to a point.

Of course, the natives of Borneo do not dress as we do. The climate is so warm that little clothing is required. The people are fond of ornaments. On their arms, ankles, and about their waists the women wear many bamboo hoops covered by brass rings. It is quite common to tattoo the body, as this kind of marking is considered very ornamental.

The houses are quite primitive. Very commonly they are built upon the banks of the streams and along the shores of the island. This is because the chief means of travel is by boat. The houses are built on piles to raise them above floods or the tide and partly also as a means of protection against enemies. One or more notched logs placed against the house take the place of steps. The roofs of the buildings are thatched. There are no stoves and practically no furniture. The people sit upon the floor and sleep upon mats.

In many cases houses are occupied by individual families, but some of the houses are occupied by as many as one hundred persons. These buildings are known as "Long Houses." Like the small ones, they are elevated. A veranda extends entirely around the house. This is the common meeting place, where the occupants of the house visit or carry on their simple industries. Rooms for the various families open on the veranda.



FIG. 37. — In the Village of Papar Kampang, British North Borneo, showing Types of Houses Built on Stilts, and the Main Street, — a Shallow River.

The industries of the Dyaks are few. The men fight, hunt, fish, make boats and their various weapons. These consist of bows and arrows, spears, daggers, and blowpipes. The women prepare sago, pound rice, and spin. Fish are speared, shot, and obtained by poisoning the waters of the streams. Poisoning the water does not seem to render the fish unfit for food.

One of the curious industries of the people is the collection of edible birds' nests. The nests are made by a species of sea swallow, and consist of a gelatinous material which the Chinese consider quite a delicacy in the making of soup. The birds build their nests on the roofs and walls of large caves. The Dyaks construct a scaffolding of bamboo poles. A man carrying a long pole will mount a scaffold and push off the nests. Large numbers of them are exported to China.

When a native of Borneo is accused of some crime, the matter is settled in a very curious manner. Instead of carefully investigating the situation, the accuser and the accused are required to plunge their heads under water. It is quite an elaborate ceremony. The friends of each man are present and shout and call upon the spirits to prove that their side is right. The man who keeps his head under water the longer is declared to be the innocent one.

There are no large cities. Banjermasin, situated

where the Martapura flows into the Barito, is the most important. It handles gold dust, coal, copra, pepper, wax, rattan, gum, resin, baskets, and swallow's nests. There are many Chinese; and they live in a quarter by themselves, as do the Japanese.

You observe that a part of Borneo is controlled by the English and a part by the Dutch. The Spanish were the first Europeans to visit the island, landing in 1521. The district known as Sarawak belongs to an English family by the name of Brooke. One of the ancestors of the present family did a great deal for the Dyaks in northwestern Borneo, and in payment he was given a title and a large tract of land.

CHAPTER XIII

JAVA

JAVA has been called the "Queen of the Eastern Archipelago." It belongs to the East Indies, and is the most important island of that group. Java is a Dutch possession, as are most of the other East India islands. Buildings were constructed in Java by the Dutch as early as 1595, and in 1677 they had extensive holdings there. Slavery was abolished in Java in 1859.

More than twelve hundred years ago, the Hindus came to Java. In the fourteenth century the Mohammedans triumphed over the Hindus. While the Mohammedan faith remains, there are wonderful temples scattered over the island as silent monuments to the work of the followers of Buddha. These marvelous ruins are chiefly in the central and eastern parts of the country. Many of the buildings are adorned with sculptures. The temple of Baro-Bador in the south central portion is built on a hilltop. It has a square base, and rises in six terraces. It is built of blocks of lava, and the sculptured figures and images of Buddha are of the same material. This is one of the

most beautiful temples in the world. No lime or mortar was used in the construction, the joints being perfect.

Java lies directly south of Borneo and the Java Sea. Sunda Strait separates it from Sumatra. It stretches east and west 600 miles, and its average width is about 125 miles. Its area is about that of the state of New York, or four times that of the Netherlands. There are 30,000,000 people living on the island, or about a third as many as are in the entire United States.

The country is divided into 22 districts, included in Eastern, Western, and Middle Java. The natives are Malays of three tribes or nations: the Sudanese, Javanese, and Mandurese. Many of the wonderful little Javanese people were seen in their native village at the World's Fair in Chicago in 1893. Many of these people are civilized, and are not unlike the Filipinos.

Each district is ruled by a native prince. There is also a Dutch Regent, or Resident ruler, in each district. The Regent is called the "elder brother." The entire country is under a Governor General and a Council appointed by him. The natives are quiet and easily managed; and they pay great homage to the Dutch. They are taught how to till the soil and harvest crops. They have little ambition but love amusements, celebrations, and feasts. They are great gamblers and frequently gamble away in a short time the accumulation of months.

A range of mountains extends from east to west the entire length of Java, and nearly through the center of the country. In the interior these mountains rise to altitudes varying from 5000 to 12,000 feet. Many of the peaks are volcanic, and some of the volcanoes are now active. Mountain spurs project both north and south, and inclose not only valleys but high tablelands.

It can thus readily be seen that while Java lies only a short distance south of the equator, it has, on account of its varying altitude, a great variety of climates. On the north coast the land is low and swampy. Toward the west there are great swamps with forests of mangrove trees. On the south it is rocky, and steep cliffs project in some places into the Indian Ocean.

Perhaps nowhere in the world is the soil more productive than in Java. As it is in the torrid zone, the seasons are the wet and dry. In the lowlands there are tremendous thunderstorms accompanied by lightning, frequently as many as a hundred storms coming in a single year. From 60 to 185 inches of rain may fall yearly. While it may be uncomfortably hot in places, on the highlands the temperature drops as low as 32° F., the temperature varying according to the altitude. Latitude, altitude, and the ocean all play important parts in determining the climate of Java.

There are many rivers in Java. Some of these are

perennial. As much sugar and rice are produced, irrigation is carried on extensively in all portions of Java, and everywhere the island gives the appearance of a vast garden. From the rivers, canals extend in every direction. The streams help to fertilize the soil as they carry the rich material formerly thrown out by the volcanoes. The water from the irrigation ditches, the natural moisture that falls in the form of rain, the heat, and the fertility of the soil, coupled with the knowledge of farming possessed by the Dutch, serve to produce two or three excellent crops yearly.

The people have so utilized the natural rise of the ground from the coast to the shoulders of the mountains as to form a series of terraces. When covered with trees and vines, these terraces give the appearance of a number of green steps. The country reminds one of the terraced banks of the Rhine in Germany, but of course the vegetation is different.

Nearly one fourth of Java is forest covered. One of the most useful forest trees is the teak. This is very durable and is used in shipbuilding. Teak lumber is exported.

In the forests and jungles, especially the low forests and slopes to the east, are many tigers, leopards, and panthers. In the marshes are rhinoceroses. Deer, wild hogs, wild cattle, monkeys, and bats there are in abundance, and numerous varieties of birds, including

the peacock, partridge, quail, and pigeon. Our domestic poultry is supposed to have developed from the jungle fowl of Java. The chief animal used for domestic purposes is the patient water buffalo. There are also many cattle and horses.

In Java much of the land is in the form of plantations, owned by the government. There are many plantations controlled by private individuals, however. The largest plantations are those of sugar, rice, and coffee. Rice is the principal crop, and is grown on the low coast plain, watered by the canals. Most of the rice is used in Java, but some is exported to Borneo.

The principal export is sugar. This is chiefly sent to Europe, although some finds its way to the refineries of the United States. The sugar is grown on the lowlands, the plantations being owned mostly by Dutch corporations. The cane grows much taller than in Cuba, sometimes to twice the height of the natives. The moisture and heat and the fertility of the soil account for this. There are immense sugar mills scattered about. Some of the homes of the owners of the plantations are very palatial and as fine in every way as the beautiful homes in Europe or this country.

In addition to the rice, coffee, and sugar, there are fields of cotton, tea, opium, tobacco, maize, and on the higher levels, wheat and rye. The chinchona tree, brought years ago from the Andes Mountains, yields



Photograph from Janet M Cummings

Fig 35 — A Rice Field in the Making on the Island of Java This Photograph Shows How the Rice Fields are Plowed in Java The Animals are Native Carabão

quantities of quinine. Quinine is obtained from the bark of the tree. Half of the world's supply of quinine comes from Java. Cinnamon and indigo are other valuable products.

The plants from which indigo is obtained are cultivated in rows. The broad leaves of the plants, which are picked two or three times each year, contain the coloring matter. These are soaked in water, and when soft and beginning to decay, the coloring matter comes out of the leaves and mixes with the water. Boiling separates the coloring matter from the water. The blue cloth, so much worn by the Dutch, is colored with indigo. This dye finds a ready market in every country.

Tea is picked by girls and women, and placed on squares of white cloth. The leaves are made into bundles and are carried on the heads of the natives to the factory. When the leaves are wilted, they are rolled into compact form and dried on stone floors, where protection is had from the sun.

Of fruits, there are many varieties. The banana, pineapple, guava, breadfruit, custard apple, mango, and cocoanut grow abundantly.

Petroleum is produced in great quantities. When the fields of petroleum were first being developed, the Dutch sent representatives to Pennsylvania and California to study our methods of handling the oil wells.

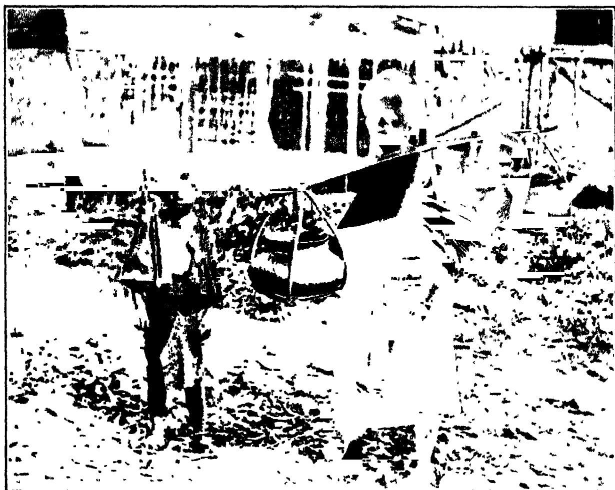
Java now furnishes much of the coal oil used in the East Indies and Japan. The United States still sends considerable petroleum to Japan.

The chief food of the people is rice. The principal meal of the day is breakfast, which comes between one and two o'clock in the afternoon. This, however, does not mark the opening but the closing of the working day. Owing to the heat, the comfortable working time is the early morning. The rice table, or Rijsttable, is an interesting feature of Javanese life. Guests are served with a quantity of rice in large soup plates. There is then placed upon this a variety of vegetables, fish, fowl, and eggs. This is flavored with portions of cucumber, garlic, onions, peppers, and spices. A second course is of solid meats and vegetables. This is followed by a dessert.

Dinner is eaten late in the evening. The well-to-do stay in doors during the hot afternoons. Following the dinner, they make calls, drive, or engage in pastime.

The markets are interesting. The natives visit them early in the morning. Picturesque Javanese may be seen trudging along the road. Each native carries two baskets on a pole over his shoulder, just as you have seen the Chinese do in pictures. But in Java, the markets are chiefly conducted by Chinamen. They are the real merchants. At the market, the shouting and calling would be distracting to a visitor.

The houses of the Europeans are frequently built of stone, with marble, or tile, floors and wide verandas, and are surrounded by large, attractive gardens. The natives live in cottages with gable or thatched roofs. Men and women dress much alike. The skirt or



Photograph from Janet M Cummings.

FIG. 39. – A Javanese Water Carrier and Her Children.

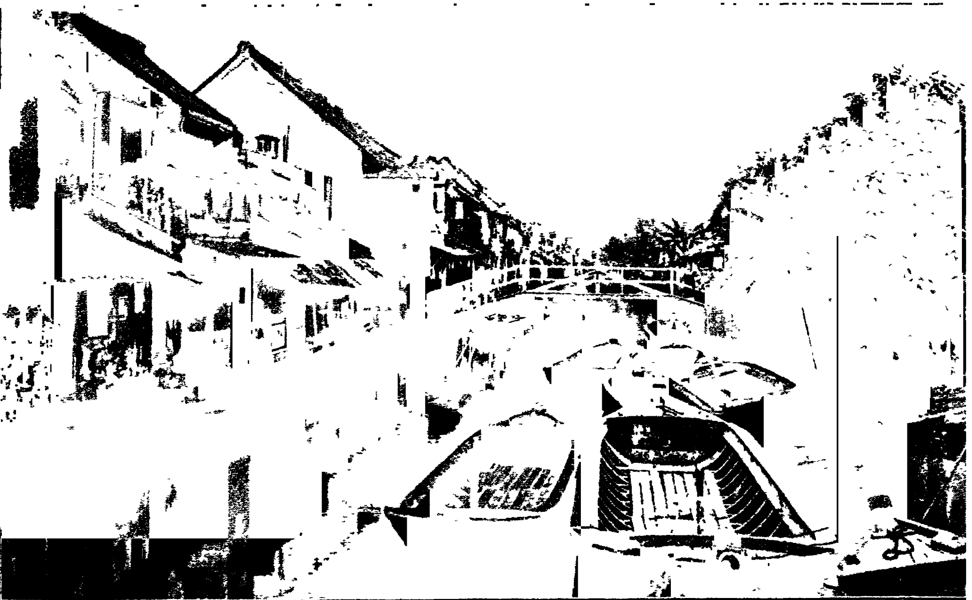
sarong is fastened at the waist and reaches below the knees. The kabaya is a short jacket. A scarf, or cumberbund, is sometimes worn about the waist or shoulders. Men frequently wear a kerchief on the head, and over this a wide straw hat. Women wear nothing on the head.

The capital of the Dutch East Indies is Batavia, located in the northeast part of Java. It is six miles from the coast and upon swampy land that has been drained by canals. Formerly the harbor was poor, but an artificial harbor has been formed. The Jacatra, or Tjilwong, River flows through the city. Batavia is the commercial center of Java; Tanjong Priok is the port, and is connected with the city by a railway.

The streets of Batavia are wide and straight, some of them being 200 feet in width. In some streets canals occupy the center. The canals are lined with stones, and are protected by banks or dikes. Trees border the streets and the squares. In the eighteenth century the city was fortified. Some of the old buildings date back many years; the Town House, to 1652. Then all the canals were filled with water. Now some of them are dry. Natives chiefly inhabit the old town, while the fine houses of the Europeans are located in New Town. This is made up of many beautiful suburban villages, annexed, much as a city annexes territory in our country. The public buildings are imposing. Batavia is the official residence of the Governor General.

Thirty-five miles inland from Batavia is Breitenzong. Here are located some of the most famous botanical gardens in the world.

Surabaya is on the Java Sea near the east end of the



Photograph from Janet M Cummings

Fig. 40. — Scene in Batavia, Java.

island. It is the largest city, having more than 150,000 people. It has a good harbor and carries on extensive commerce with the ports of Asia. Surabaya is the chief naval station of the Dutch East Indies. Samarang, between Batavia and Surabaya, is an important town.

The Dutch are great road builders. Miles and miles of excellent road have been constructed, thus allowing for the easy transportation of fruits, grains, rice, coffee, sugar, and other articles of commerce, to the coast towns. A railroad connects the chief cities and spurs run into the island at different points.

Java, long known as one of the most beautiful spots in the world, is now being visited each year by an increasing number of Americans and Europeans. The Dutch have not encouraged visitors, although their treatment of them is always courteous. Much formality attends the securing of passports and credentials to travel on the island.

CHAPTER XIV

SUMATRA

SUMATRA is one of the largest islands in the world. Can you name and locate the islands that are larger? It belongs in the East Indies group of islands and is one of the Dutch possessions. The southernmost part of Asia is the Malay Peninsula. Only a narrow stretch of water, the Strait of Malacca, separates Asia from Sumatra. The island extends northwest and southeast for more than 1000 miles. In width it is nowhere much more than one fourth this distance. Its area is a little greater than that of California.

Stretching away to the east from Sumatra, somewhat resembling the tail of a great kite, are Java and other islands of the East Indies. Sumatra is crossed by the equator in nearly its central portion. This gives it a tropical climate. The direct rays of the sun and the great rainfall produce everywhere a luxuriant growth of vegetation. The climate is quite healthful on the east coast, and, in the highlands of the interior, is most delightful. The monsoons are irregular and rain falls during all the months of the year.

The Barisan range of mountains extends the entire

length of Sumatra along its western or Indian Ocean side. This backbone of mountains varies in average altitude from 1500 feet in the south to 6000 feet under the equator. There are many lofty cones in this range, of which twenty are volcanoes. These peaks rise to altitudes varying from 6000 to 10,000 feet. There is a second mountain range parallel to the Barisan, with high plateaus joining the ranges.

The mountain range being so near the western coast, there is only a narrow coastal plain. The mountains are covered with luxuriant tropical growth. A wide alluvial plain stretches to the east and north. This is covered with jungle, forest, and marsh. The rivers are sluggish, and form deltas at their mouths.

Between the chains of mountains there are extensive and fertile valleys. In the interior are many beautiful lakes. Some of these occupy the craters of volcanoes that were once active. The largest lake is over 1000 feet in altitude, is 17 miles long and 6 broad, and is the source of a river.

The active volcanoes throw out quantities of ash. This injures everything upon which it falls, and makes soil cultivation unprofitable in some sections.

The native inhabitants are chiefly of the Malay race. Many of the tribes, particularly those of Acheen in the west, are difficult to govern. They are tall, well made, and resist the Dutch supremacy. In other parts

of the country the natives are subject to Dutch rule. Near the coast, a Dutch Commissioner or "elder brother" is supreme. One of the tribes in the interior is, in manners, customs, and religion, quite similar to the Hindus; and the ancestors of these people may have come from India. They till the soil, raise stock, and manufacture jewelry, cloth, and firearms. These they sell to the outlying Malay tribes. Most of the tribes practice the Mohammedan religion.

In many places the natives live communal lives; that is, several families occupy one house. Houses are sometimes built upon posts of ironwood. The floors are high at the sides and sag toward the middle. The homes are neat and furnished with comfortable beds. In some parts of the country the caste system prevails. The better buildings have high gabled roofs. In front of each house there is usually a *gaedang*, or rice granary.

The dress of the natives is most picturesque and highly colored. The headdress is fantastic and elaborate. The skirt, or sarong, is, with the well-to-do classes, sometimes trimmed with gold lace. A woman of the poorer class will wear one somber-hued sarong; a well-to-do woman, two; and a wealthy woman, three sarongs. Jackets are worn loose. Gold and silver braid, bracelets, and ear-rings or ear buttons are much worn. Tiny babies have their ears pierced for the ear-rings.

The chief city and principal port is Padang on the west coast. Here, almost under the equator, the sun's rays are nearly vertical at all times and the climate is tropical. Rain falls practically every afternoon. Great palms are everywhere seen, and on the level plains about the town there are numerous banana plantations. The buildings are plain structures, but are covered with luxuriant vegetation which beautifies them. The hotels are poor. Although fruit is to be had in abundance, one may find it difficult to obtain enough to eat, as the people are lazy and indifferent. The moist hot climate produces malaria. Europeans lack ambition and become enervated.

Some distance inland from Padang and at an altitude of 2000 feet, is Padang Pandjang. The people are well-to-do. Houses are of teak wood and are beautifully paneled. Fort de Kock is some 3000 feet above sea level. Here the climate is delightful. Because of the cool, dry mountain air, the Dutch have established here a sanitarium for the army. The town is surrounded by open prairie. Much fruit is raised and upland rice produced.

Extending from Padang through Padang Pandjang and Fort de Kock to Pajo Kumlo, is a railroad. This is one of the first cogwheel railroads ever built to carry freight, and it affords an easy mode of travel to the interior. Coal is brought down to Padang for the

Dutch steamships, which make this port a coaling station in both directions. Not far from the coal fields there are rich petroleum deposits.

As you travel upon the railway, you see low, swampy jungles on either hand. Tropical fruits and plants grow in profusion, and reptiles and insects are everywhere seen. There are palms of many varieties, and scattered here and there are banana plantations. These have been planted by the Chinese.

Farther on is a wonderful gorge, or, as it is called, the Klof van Anch. The high mountain walls, waterfalls, turbulent mountain streams, great trees and ferns and shrubs combine to produce scenery of extreme beauty. Still farther on near Pajo Kumlo is the Klof of Haran. Here the waterfalls of Batang-Haran are quite wonderful.

On special days the Passar, or market, is held in the various towns of Sumatra. Here gather the inhabitants from miles around. The natives dress in the most gaudy fashion, although the brilliant colors harmonize. On every hand are displayed fruits and vegetables of many varieties. There are ornaments, trinkets, toys, mechanical devices, and household utensils. Inviting dishes for the table, and palm wines and cooling beverages are offered for sale.

Because of its tropical climate, Sumatra produces many varieties of fruits. These may easily reach the

coast for shipment. Sumatra is in the direct line of trade between the East and the West. In Sumatra grow the orange, lemon, guava, citron, mango, bread-fruit, cocoanut, pomegranate, banana, and pineapple. Banana plantations are extensive, and bananas are shipped in large quantities.

The climate and soil also lend themselves to the profitable cultivation of sugar, cotton, tobacco, and rice. These are cultivated on large plantations. The Chinese, who do much work on the banana plantations, are the best rice farmers. From Palembang much fine coffee is shipped. Cocoa, maize, indigo, and millet are profitable crops.

Of the many kinds of spices, pepper is the most important. Nearly half the pepper used in the world comes from Sumatra. The northwest coast is called the pepper coast. The pepper grows on a bush or vine. These bushes may be cultivated separately, as are grapevines, or they may twine about a tree or pole. The berries are picked when red. When dried, they turn black. These are ground and furnish the black pepper for our tables. If the berries are allowed to ripen, they become yellow. By removing the outer skin and grinding the berries, white pepper is produced.

From the sago palm is obtained the sago of commerce. By grinding the pithy substance, and by washing, so

that the woody fiber may be floated off, the grain or powder remains.

Sumatra has many varieties of trees. Several of these are good for timber. In addition to the rattan palm and numerous varieties of palm trees, there are bamboos, fig, camphor, rubber, and other resin-producing trees. Gutta-percha is obtained in considerable quantity from the forests. Teak, ironwood, and ebony are excellent hardwoods. There are also forests of fine pine trees. There are flowering trees and shrubs in abundance.

Cattle, hogs, sheep, horses and small ponies, goats, and Indian buffalo are raised by the natives. In the forests there are herds of elephants. The rhinoceros, hippopotamus, and crocodile are here found. The tiger, leopard, anteater, taper antelope, deer, orang-outang, and many kinds of bat are numerous. Many species of fish frequent the rivers.

In the interior the tribes do excellent silver filigree work, and the leaden ware is of the finest quality. The gold woven cloth and jewels find ready market.

Aside from Padang and Palembang, Acheen in the extreme west, Benkulen in the southwest, Siboga, Telok, and Belong are the chief towns. Singapore on the Malay peninsula serves as the principal market for the Sumatra products.

Fig. 41.

CHAPTER XV

THE PHILIPPINE ISLANDS

It is a long distance from New York Bay, the chief eastern gateway of our country, to San Francisco Bay, our chief western gateway. It is a much longer distance, however, from San Francisco to the Philippine Islands, the most westerly possessions of the United States.

These islands were discovered in 1521, and they remained almost constantly in the possession of Spain from that time until 1898 when they were ceded to our country as one of the results of the Spanish-American War. The United States paid Spain $20,000,000 for the islands; and it was a good bargain, for their natural resources are enormous and their annual exports are worth more than the purchase price.

There are about 2000 islands in the group, most of which are nothing but small masses of rock rising above the ocean waves. Luzon and Mindanao are the largest of the islands, each of which is about the size of Pennsylvania. Other important islands are Mindora, Palawan, Panay, Samar, and Negros. The total

area is about as great as that of Colorado, but the population is many times as great.

The islands are very mountainous. In fact, like the Japanese Islands, they are the highest parts of a partially submerged mountain system. Many of the mountains are volcanoes, a few of which are yet active. Some of these peaks are about 10,000 feet in altitude. Earthquake shocks are frequent, and hot springs are numerous.

The Philippine Islands extend from about 4° to 21° north latitude. The climate is, therefore, tropical. Upon the lowlands the great humidity causes the high temperature to be much more oppressive than it would be in a dryer climate. Upon the highlands the climate is delightful.

On the eastern slope of the islands there is considerable rain at all seasons of the year. From December to June the northeast trade wind prevails; and, as most of the moisture is condensed upon the east side of the mountains, the west slope experiences a dry season. The high temperature of the southern part of Asia during the summer carries the doldrums northward, and causes the southwest monsoon to blow. As a result, the west slope has its wet season.

In most parts of the islands, the average annual rainfall is high. In Manila it is about 50 inches, but in many mountain districts it is very much more.

What is the average annual precipitation where you live?

During the summer and autumn, hurricanes, or typhoons as they are called in the Philippines, occasionally sweep over the islands. These storms originate in the equatorial part of the Pacific Ocean. When they are in progress, the wind is sometimes so violent as to tear down houses and uproot great forest trees. What part of the United States is sometimes visited by hurricanes?

The high temperature and the abundant rainfall result in dense forests. These forests are especially valuable to the United States because they contain much hardwood such as the ebony, sandalwood, and mahogany. These woods are used in the manufacture of furniture. When the transportation facilities in the islands have been greatly improved, we shall import these woods in large amounts.

In the forests there are many other valuable trees and plants. The cocoanut, banana, rubber, and bamboo abound. The latter, as in Japan, is used in many ways. The rattan is another very useful plant. It enters into the construction of houses, furniture, crates, and ropes. Cinnamon, cloves, and spices are obtained from the forests. Palms and tree ferns flourish. Vines twine about the trees and hang from the branches. The ground is obstructed by creeping

plants which make walking through the forest quite difficult.

Animals of many kinds find a congenial home in the forests. There are great snakes, apes, monkeys, antelopes, wild hogs, and crocodiles. Birds, some of them having bright plumage, are numerous.

Of the domesticated animals the water buffalo, or carabao, is the most useful. It is very extensively



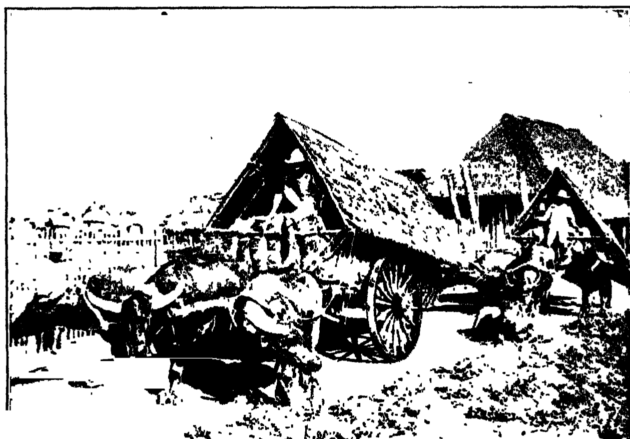
Photograph by W. L. Richardson.

Fig. 42. — Transportation by Means of the Carabao.

used both in agriculture and in transportation. Cattle, goats, and horses were introduced by the Spaniards.

Because of the tropical climate, sugar, rice, the banana, plantain, pineapple, orange, lemon, cocoanut, cocoa, and coffee are successfully grown. The most valuable export is a fiber known as abacá, or Manila hemp. Nowhere else in the world does it thrive as

it does on these islands. It is used in making cordage, ropes, and sacking. It is extensively exported to the United States, where there is a great demand for it, largely because of our enormous output of grain. Rice, tobacco, and sugar are other important crops.



Photograph from Janet M Cummings.

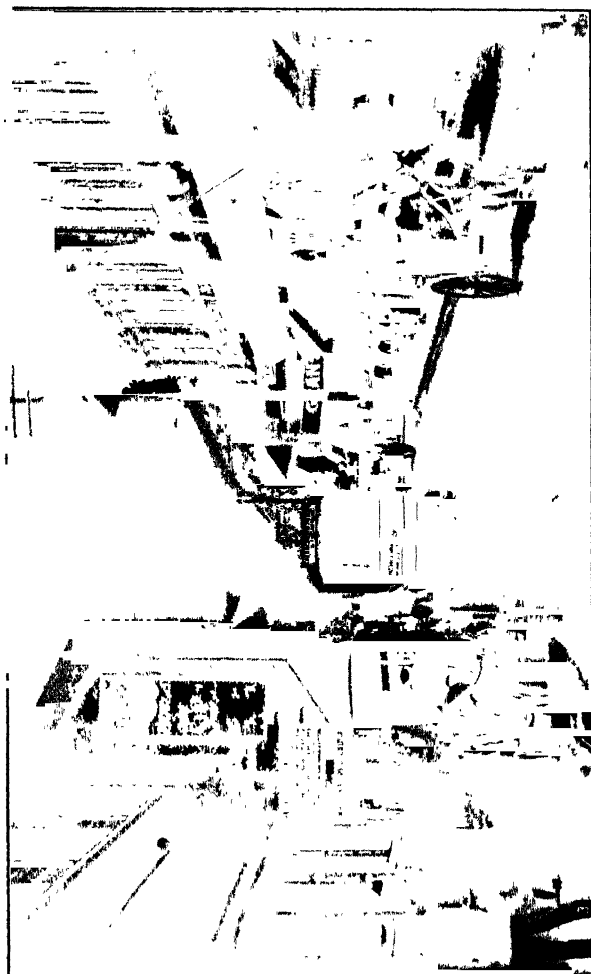
Fig. 43. – Native Carts Loaded with Hemp, Luzon, Philippines.

Because of the fact that it rains during all of the seasons on the east coast, two or three crops of rice are grown each year. On the west slope, where there is a rainy and a dry season, but one crop of rice is grown yearly. Although there is a great quantity of rice produced, some is imported. This is because there is a large population, about 7,000,000, and rice is the chief food.

By the people of the more backward tribes, the farm labor is performed by hand. The more advanced people, and particularly those who operate large farms, use up-to-date machinery and methods. Horses are not used extensively upon the farms, the carabao taking their places. In the cultivation of rice this is especially true. Much of the work is done when the fields are covered with water, and the carabao is the only animal that can be successfully worked in the mud. In fact they delight to wallow in the mud and water, and unless they can do so frequently they do not thrive.

There is considerable mineral wealth in the Philippine Islands; but mining is not an important industry. The Spaniards paid little attention to mining, and large numbers of the natives lack ambition as well as capital. There are deposits of gold, silver, lead, copper, iron, sulphur, petroleum, and marble. The lack of coal is a disadvantage.

There are a number of cities in the islands, but only one large one, Manila. This city is situated on the west side of the island of Luzon on the shore of Manila Bay. The bay is large and deep, and has an entrance about six miles wide guarded by the island of Corregidor. As the bay is open toward the southwest, storms from that direction have easy access to the shipping and to the city.



Photograph from Janet M Cummings

FIG 44 — A View of the Escolta Manila

Manila is built at the mouth of the Pasig River upon land which is only about ten feet above sea level. As the land is so flat, the stream is sluggish. It divides the city into two sections, the old and the new. Great rafts loaded with cocoanuts are floated down the river to Manila, to be from there exported in their natural form or as copra.

Because of its position, Manila is the natural outlet for the products of the Central Plain of Luzon. The Laguna de Bay region is tributary to it also. The railroad and the telephone systems of the island center here, and the city has cable connections with San Francisco. From the mountains, a number of miles distant, a water supply is obtained.

The second city in importance as a seaport is Iloilo, on the island of Panay. It exports much sugar. Lipa, Banang, and Batangas in the southern part of Luzon, and Cebu, on the island of the same name, are other cities of some consequence.

Of the total population of the Philippine Islands, about seven eighths are Filipinos. Great numbers of these people are highly educated and live in beautiful homes. Some of the natives are uncivilized, and most of them live in rather a primitive fashion. This is the natural result of the climatic conditions which make labor much less necessary than it is in the temperate zone.



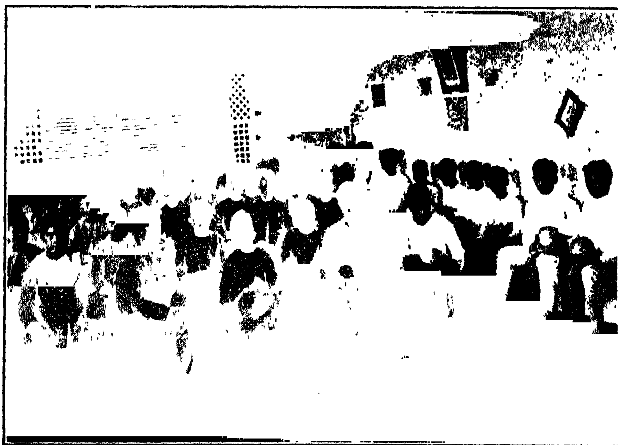
Fig 45 — Houses in the Philippine Islands

Some of these primitive people do not till the soil, but simply wander from place to place, living upon fruits and nuts and such game and fish as they can secure. The more advanced tribes till the soil by means of sharpened sticks, and build houses of bamboo poles, with floors and furniture of the same material. The roofs are thatched with grass or palm leaves. Because of the dampness, the houses are usually built on posts, and the space beneath is used for storage or for pigs or poultry.

The natural wealth of the Philippine Islands is but little developed. This is in part due to the nature of the climate, which causes the people to lack energy. Many of the people are poor, and lack of capital always retards the development of a country. When more and better farming tools are used, the land will yield much larger crops. Lack of transportation facilities is another drawback.

Manufacturing is not extensively developed. Cloth, hats, baskets, nets, hammocks, boats, tools, and other things are made in the homes. These things are taken to the markets and exchanged for other articles, or they are sold to buyers. There are of course a few manufacturing plants. Liquor, tobacco, lumber, cotton goods, shoes, hats, and matches are the chief articles made. Much of the commerce is with the United States.

Our government has done much for the people since we purchased the islands. Rail and cart roads have been constructed, telegraph and telephone lines built, sanitary conditions enforced in the cities, and schools established in the various islands. The boys are being



Courtesy Bureau of Education, Manila, P. I.

FIG. 46.—Hat Making at the Sampaloc School, Manila.

taught how to use tools and how to farm more successfully, and the girls are given instruction in sewing and cooking. The children learn readily and make rapid progress. The Filipinos of the future will be better able to support themselves, and will live more healthful, useful, and happy lives than do those of the present.

CHAPTER XVI

THE FIJI ISLANDS

SITUATED just west of the Samoa Islands lies a group of islands some 200 in number. Most of these are so small that they are not even located upon the map. Perhaps 80 of them are inhabited. These are the Fiji Islands. They belong to Great Britain. They are ruled by an English Governor or High Commissioner.

These islands, which are the most important of the possessions of the English in the South Pacific, were discovered in 1643 by Tasman, a Dutch navigator. This was one year after he discovered the island of Tasmania, which was named in his honor. In the days of our American Revolution, Captain Cook stopped at Viti Levu, the largest of the islands. During the middle of the last century, an expedition from the United States visited the Fijis.

Most of the islands are of volcanic origin, and the lava soil is very fertile. There are many old volcanic cones with rounded tops. The lava poured out of the openings and flowed down the sides, building up the

cones, much as the material thrown out by the geysers in Yellowstone Park builds up what are called "formations." Many of the smaller islands are of coral formation, and coral reefs surround them.

Vanua Levu is next to Viti Levu in size. On these and some of the other large islands, there are extensive forests and tropical vegetation of many varieties. Of the trees there are the cocoanut and other palms, the pine, tree ferns, and tree nettle. The needle-pointed leaves of this tree, when they touch the hand, sting as does a poisonous insect.

The principal product of the Fijis is sugar. The plantations are owned and operated by wealthy corporations. The largest fields of sugar cane and mills are on Viti Levu. The work on these sugar plantations is done by coolies, brought from India, as the native Fijians will not work in the sugar. Much of the sugar is exported to Great Britain. Copra is produced in large quantities and tobacco is grown. These are sent to Great Britain.

Rice, taro, yams, and vegetables are extensively produced. These are used almost exclusively on the islands. Bananas, pineapples, lemons, and peanuts are shipped to Australian ports and to New Zealand. Some sugar, copra, rice, tea, and tobacco are sent to these countries. Can you suggest a reason for such extensive exports to Australia and New Zealand?

The waters surrounding the islands furnish many fish. These are eaten by the natives. Much dried fish is sent to China. A peculiar form of sea life called the sea cucumber is bought extensively by the Chinese. The islanders are expert swimmers and divers. The waters are clear and the natives secure pearl shells in great quantities. These are exported to Europe, where they are made into pearl buttons.

Of the towns, Suva, on the island of Viti Levu, and Louvka, on Evalu, are the largest. They much resemble European towns. The houses, however, are low and are surrounded by large yards, with trees, shrubs, and flowers.

The native dwellings are similar to those of Samoa. The side walls are covered with plaited reeds. Palm leaves, closely woven, serve as an excellent thatch, and make practically a rain-proof roof. No nails are used in constructing these native houses. Fiber, closely laced and knotted, serves all purposes. At one end of the house is a raised platform extending from side to side. This, covered with mats, is a comfortable sleeping place. A bamboo stool or headrest makes as good a pillow as the Fijian desires.

Each house has three doors. The trunk of a cocoanut tree, placed lengthwise, is used as an entrance stairway. In some of the more pretentious homes the side walls are of split bamboo, nicely paneled.



Photograph from Janet M Cummings

Fig. 47.—General View of Suva, Fiji.

The floors are of bamboo, interlaced in squares, and produce a beautiful parquetry effect.

In the low country the homes are built upon poles or piles, and these are protected securely by foundations or platforms of rock, as typhoons are severe at certain seasons and the floods are destructive. In the center of the floor is a pit or fireplace. Over this pit is a roasting frame for meats and fowls. Yams and vegetables are boiled in earthen vessels. These are made by the native potters. Closely woven mats are on the floor. These are scrupulously clean. The natives go barefooted, and just outside the door of each house is an earthen vessel containing water. Before entering the house, the feet are bathed in this vessel.

Most of the scattered islands have native chiefs or rulers. These are subject to the advice of the British Governor. Before the rule of the British the people were indolent. They lived from day to day and made war upon their neighbors. This was not done for conquest, but to satisfy their cannibalistic desires.

While to-day there are many points in the interior little known, traveling anywhere is pleasant and perfectly safe. In the more distant parts the roads are mere paths. The natives are industrious, prosperous, contented, and are model farmers. Irrigation is extensively carried on. The people construct open ditches, the mains being of bamboo.

The Fiji islanders are adepts as canoe builders. Some of their canoes are built to a length of 100 feet. In canoe building and in swimming and diving they can successfully compete with the Hawaiians.

There are on the islands many schoolhouses and churches. The teachers and missionaries find the natives ready pupils. While there are some English teachers and ministers, most of them are natives. These have been trained in the schools established on the islands.

The population of the islands numbers perhaps 130,000. Of these 90,000 are native Fijians. There are 30,000 or 40,000 Indians working on the plantations. These people from India seldom return to their own country. The natives of Fiji have stiff, straight hair, flat features, and are frequently very dark brown or almost black in color. They are strong, and give the impression of being exceedingly wild and fierce.

The natives subsist chiefly on yams. They also eat bananas, breadfruit, fish, fowls, and pork. They drink water and the milk of the cocoanut.

As the yam is the principal element in the daily menu of these interesting people, you will wish to learn how it is grown. When the ground is cleared, small mounds are made two or three feet apart. Upon each mound a yam is planted. If the ground is flat, open drains

are made between the rows. Canes and bamboos are used horizontally, and supported by forked sticks. Upon these the vines climb.

The yam is a root or tuber, much like the sweet potato. Yams are dug in March. When the stems dry, it is an indication that the tubers are ripe. When dug, they are placed in piles, in open sheds, that have water-tight thatched roofs, supported by upright bamboos. The yams are turned over frequently and the growing stems or sprouts rubbed off, as we sometimes do with potatoes. The yams vary in weight from two or three pounds to a great many pounds. They are served either boiled, roasted, or steamed.

There are no large rivers, but on Viti Levu, which is some 100 miles in length, there are two rivers that allow steamers to penetrate several miles into the interior. On the small island of Uban, on which was established the ancient capital of Fiji, there are interesting ruined temples and monuments.

CHAPTER XVII

THE SAMOA ISLANDS

LYING in the South Pacific Ocean, more than 4000 miles from San Francisco, and on the steamship routes from Honolulu to Australia and New Zealand, are the Samoa Islands. Although there are thirteen islands in the group, only three have commercial value or are inhabited. They are chiefly of volcanic origin, and are subject to earthquakes, which are usually not severe. Some of the islands are of coral formation, and in many places there are coral reefs or barriers with their surfaces just above the water. The tops of these reefs stand from a few feet to two or three miles apart. These immense reefs have been made by the accumulation, century after century, of the bodies or skeletons of the little coral polyps that live in these waters.

In the old days the Samoas were called the Navigator's Islands, owing to the dexterity of the natives in sailing their craft. The islands were discovered by the Dutch in 1722. For a long time Great Britain claimed territory here. The islands are now held by Germany and the United States. On account of their lying in the direct route for steamships from the western

coast of our country to Australia, Tutuila, owned by the United States, is of special value to us.

The volcanic mountains rise in some places to a height of 4000 or 5000 feet. They are covered with tropical plants and trees of many varieties. On the sides or tops of the peaks or cones the cocoanut palm grows profusely. The lava soil is exceedingly fertile, and the heavy rainfall, coupled with the high temperature and sunshine, produces fruits and vegetables in abundance.

During the greater portion of the year, the winds are moderate. Near the coast on the plateaus the climate is healthful. During February and March, terrific hurricanes are frequent. They do much damage to crops and houses. In some portions of the islands upwards of 200 inches of rain falls annually.

Of the three largest islands, the easternmost, Savaii and Upolu, belong to Germany. Tutuila and three smaller islands of the Manua group belong to the United States. Savaii is some 45 miles long by 30 miles wide. Upolu is about half as large, and Tutuila still smaller. Our country has had its possessions in Samoa since 1899.

Matauto is the chief town in Savaii. Apia, however, on Upolu, is the principal German port. It has a good harbor. The island is surrounded by a coral reef, and back of Apia the mountains rise to a height of 4000



Courtesy Oceanic Steamship Company

Fig 48 — Entrance to Pago Harbor

feet. On these are cocoanut palms, breadfruit, and guava trees. Apia is the official residence of the Bishop of all the South Sea Islands. Many of the public or large buildings are constructed of cut coral rock. The natives live on one side of the town in a lower, marshy district.

Pago Pago, pronounced Pango Pango, has by far the best harbor, however. It is situated on Tutuila. The harbor is the crater of an extinct volcano. A break in one side permits the passage of ships. The walls rise high and almost perpendicularly. The harbor is thus protected from wind and storm. This landlocked harbor or bay is two miles long and half as wide, and deep enough for any vessel. It resembles somewhat Crater Lake, in Oregon. As the only entrance is at the south, the harbor is protected against the prevailing northeast trades. The typhoons, so destructive on the sea or near the reefs, are rendered harmless to vessels which are within the harbor. An American man-of-war is usually to be found here. The commander of this vessel serves as Governor of Tutuila. A narrow shelf or beach affords opportunity for a few natives' homes.

Pago Pago, being in the direct steamship route from the United States and Europe to Australia, now that the Panama Canal is completed, will be of greater importance, both commercially and as a coaling sta-

tion, than formerly. The surrounding country is very fertile. Everywhere is seen the most luxuriant, tropical vegetation, as the rains and sun are so generous.

The native Samoans are lighter in color than most of the island tribes. Both men and women are taller and more robust than many natives of the south seas. They are honest, straightforward, dignified, and polite. Both men and women wear a kilt-shaped garment called lava lava. This is made of tapa or mulberry-bark cloth. Over this kilt the women wear a loose tunic with short sleeves. Jewelry is much admired; and necklaces, armlets, and anklets are commonly worn. These are frequently made of shells. The men have bushy black hair, and wear high headdresses. The people are apt scholars, and schools and churches are plentiful. They love music, and will attend church several times each Sunday, where they enter heartily into the singing of American and English hymns.

The food is almost universally cooked by the men. If a woman is seen doing the cooking, the men of the family may be ridiculed. In Samoa, you see, the tables are turned. The chief foods are vegetables, breadfruit, taro, yams, bananas, oranges, alligator pears, and cocoanuts. Fish are plentiful. The bonita is the favorite fish of the Samoans. They are very fond of shellfish, especially the shrimp. No spices are used

in the food, but the brackish sea water furnishes seasoning.

The principal meal occurs in the evening. At that time the family members are all together. There are no tables or chairs. The people sit cross-legged on mats. The articles of food are not placed in a common dish, as is so often the custom with primitive people. The portions are served on broad breadfruit leaves.

The house is of one room and is circular in form. It much resembles a huge beehive. It is some 30 to 50 feet in diameter and set on poles driven into the ground. There is a simple framework of uprights. The sides are made in the form of curtains that can be hung up or removed at will. The roof is tightly thatched so as to resist the rain. It is made of the dry leaves of the sugar cane, great quantities of which grow wild on the islands. These leaves are tied together by strips from the cocoanut palm. The roofs slant down from a peak, are strongly made, and, not being fastened to the framework of the house, may be carried from place to place.

Mats are used for beds. Several mats are placed one on top of another. The pillow is constructed of pieces of bamboo placed horizontally on short legs. The fireplace is a circular hole in the floor several feet in diameter and six or eight inches deep. In this is burned dried cocoanut shells. These create no smoke



Courtesy Oceanic Steamship Company

Fig 49 — Samoan Chief and a Grass House

or odor. Cooking is not done in this fireplace, but at a distance from the house. The floors are of clay mixed with small stones to make them solid. There are gardens in connection with most of the houses. In these are planted sweet potatoes, breadfruit, yams, bananas, and taro. Nearly every family has a flock of chickens.

Everywhere along the seashore the cocoanut is seen growing. In the interior or at extreme elevations, this tree does not thrive. To the height of 4000 feet, however, if reached by the salt sea winds, it grows splendidly. Nuts dropped from branches that hang over the water are sometimes carried by the sea hundreds of miles, and when cast upon the sand, will find root and mature. The small end of the nut gives forth the palm, and from the large, round end the roots spring.

The nuts hang pendant in clusters. They ripen throughout the year. As the tree grows, the lower branches wither and dry, as is the case with the fan palm. The stem or trunk of the tree is sometimes smooth and bare for a distance of from 30 to 60 feet above the ground. The tree bears in six years and comes to full bearing in fifteen or twenty years. The cocoanut tree lives to a great age.

The wood of the cocoanut finds many uses among the natives. The oil is used on the bodies of the peo-



Photograph from Janet M. Cummings.

Fig. 50. — Cocoanut Groves near Apia, Samoa.

ple to protect from sun burn. It is, also, a protection against mosquitoes and insects. The nuts are sometimes eaten in their natural condition. The water or milk is considered an excellent beverage. By allowing the soft pulpy interior to decay, and by dropping small stones and sand into the hole in the stem end of the nut, and by shaking, the soft portions may be removed. The shells are then used for drinking bottles. When the shells are cut through the middle, they make admirable bowls and cups. The fiber of the leaf is used for twine. When dry, the leaves are bound together for torches or used as fuel. So you see the cocoanut palm is very useful to the Samoan.

Copra is the meat of the cocoanut that has been dried in the sun. It is spread on mats and the juice evaporated. It is then exported to Europe and the United States to be used in the manufacture of soap.

Poi is made from taro or kalo. The plant grows from a starchy bulb. The root is baked and ground to a paste and then mixed with water. It is then allowed to ferment. A dish of poi is placed on a mat and the family gather around it. Poi is a favorite dish of the Samoans. When it is made into cakes and baked, foreigners enjoy the dish.

The breadfruit is about the size of an ordinary canta-

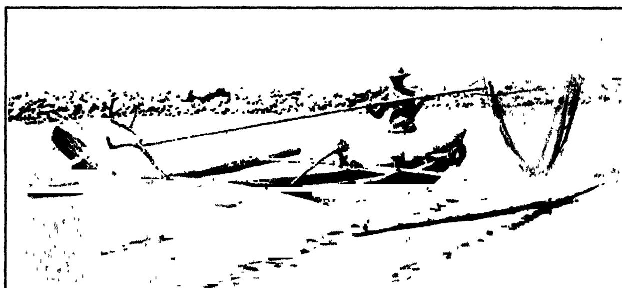
loupe. Some of these have seeds as large as chestnuts. These are eaten by the natives. The breadfruit is a starchy substance. This is baked in hot ashes covered with coals. This pulpy matter is a delicious food. It is often cooked with meat and gravy and much enjoyed.

Kava is the common drink of the natives. It is made from the roots of a shrub that belongs to the pepper family. The roots are ground between stones and then soaked in water. They are then pounded and rubbed, and a milky substance is extracted. After standing, this liquid is strained and is a cooling and refreshing drink. If taken to excess, it is intoxicating.

Many young men are tattooed about the body. Girls frequently have their arms tattooed. The men are fond of outdoor sports and competitive games. Quoits are played by throwing rods. Cricket, learned from the English, is very popular. The inhabitants of an entire village may be frequently seen watching a game of cricket.

The Samoans are adept at canoe making and rowing. Both men and women row. They take long strokes to a musical chant. Their canoes are dug-outs made by burning the interiors of logs. Sharp stones or such other implements as they have are also used. The rough boats rarely capsize, and they carry their occupants hundreds of miles to distant islands

in the Pacific. Some of the native boats are fitted with outriggers. These are light frameworks made of poles several feet in length, extending from either end of the boat outward to the water. A piece running parallel with the boat connects the poles at their



Photograph from Janet M Cummings.

Fig. 51. — Canoe with Outriggers.

outward ends. These outriggers are very effective in keeping the boat from capsizing.

The imports are chiefly cotton goods, clothing, hardware, tools, utensils, firearms, canned provisions, coal, and manufactured articles. Most of the imports come from Australia. Ships going in one direction or another are constantly touching at these islands. There is a line of small steamers plying between Pago Pago and Apia. The round trip is made in about twenty-four hours.

A short distance from Apia, on the island of Upolu,

Robert Louis Stevenson spent the last years of his life. He is buried on Mt. Vaea, not far from the town. If the island were remembered for nothing else, it would be as the home for a time of this wonderful man. Always happy and helpful to others, although a constant physical sufferer, he left to the world, through his life and writings, a priceless heritage.

CHAPTER XVIII

TAHITI

One of the most interesting islands of the South Seas is Tahiti. It is the chief member of the group known as the Society Islands. Tahiti is volcanic in origin and is very mountainous. A narrow coastal plain surrounds the island; and upon this most of the people live, because here the soil can be more readily cultivated as well as because a part of the living of the natives comes from the sea. The main body of the island is practically circular in form and is about twenty miles in diameter. A narrow isthmus called the "neck" connects this and a smaller part of the island.

The latitude is from 17° 30′ south to about 18° south. Because of its position in the tropics the climate is of course warm, but the ocean exerts a modifying influence upon it. There is abundant rainfall, and because of this, the high temperature, and the fertile soil, the mountains are clothed with vegetation to their very summits, the most lofty of which are more than 7000 feet above the sea.

Numerous streams is another result of the heavy



Courtesy Oceanic Steamship Company

FIG. 52. — A Forest Scene in Tahiti.

precipitation. Naturally the streams are short and not navigable. In their course from the mountains to the sea many falls are developed. The falls of the Fantana River are about 700 feet in height.

One of the beauties of the island is the luxuriant tropical vegetation. The banana, breadfruit, cocoanut, orange, magnolia, and tree fern are seen upon every hand. In addition to some of these plants the pineapple and the cane are cultivated.

Owing to the nature of the climate, food is easy to obtain, and clothing and shelter can be secured with comparatively little effort. As a result of this the natives live simply. Fish, which are very plentiful on the coral reef, and "fei," a variety of banana, are staple articles of food.

The native huts are built of bamboo poles and the roofs are thatched. They contain little furniture, in part because so much of the time of the people is spent out of doors. Of course some of the houses are of lumber. In some cases the houses are painted white and have roofs of red tile. As seen through the tropical foliage they are very picturesque.

The chief town on the island is Papeete, situated on the northwest coast. It has a good harbor in which one or more French vessels can usually be seen. Grass grows in the streets, for there is very little traffic upon them. Copra is exported from the port. In this, as

in other towns, there is a community pool where the women do their laundry work. On the northeast coast is the town of Papenoo. A road connects this



Courtesy Oceanic Steamship Company.

FIG 53 — Native House, Tahiti.

with Papeete, and in fact this road, some 90 miles in length, encircles the island. A drive around the island is a most enjoyable trip with the blue Pacific upon one hand and the rich tropical vegetation upon the other.

Fig. 54.

CHAPTER XIX

THE HAWAIIAN ISLANDS

If one were to get aboard a steamship at San Francisco bound for the Hawaiian Islands, he would have to travel southwestward for about 2100 miles before reaching his destination. The voyage would require about 6 days, the first part of which would be in the belt of westerly winds, but as the ship moved south it would enter the trade-wind belt.

A map of the world or a globe will show you that the Hawaiian Islands are far removed from all other land areas. How far are they from Asia and Australia? These islands are on many of the routes which connect the opposite shores of the Pacific Ocean. Because of this, the islands are often spoken of as the "crossroads of the Pacific." The need of coal and other supplies on the part of those making the long voyage across the Pacific Ocean, the growing commerce of the Hawaiian Islands, and the attractions which they offer to tourists have caused the islands to become a stopping place.

Messages of all kinds are daily flashed beneath the waters of the Pacific between the countries on its

opposite shores. An American cable connects San Francisco with the Hawaiian Islands, Guam, the Philippine Islands, and Asia.

Not all of the mountains of the world are above the sea. The waves of the ocean roll over many of them. The Hawaiian Islands are but the tops of a mountain system the remainder of which lies far below the surface of the Pacific. Naturally then the area of these islands is small. Although the group consists of many islands the total area is less than that of the state of New Jersey, and in 1910 the population was not quite 200,000. The largest of the islands are Hawaii, Lanai, Molokai, Oahu, and Kauai. The first of these, although larger than all of the other islands of the group combined, is only about the size of Connecticut.

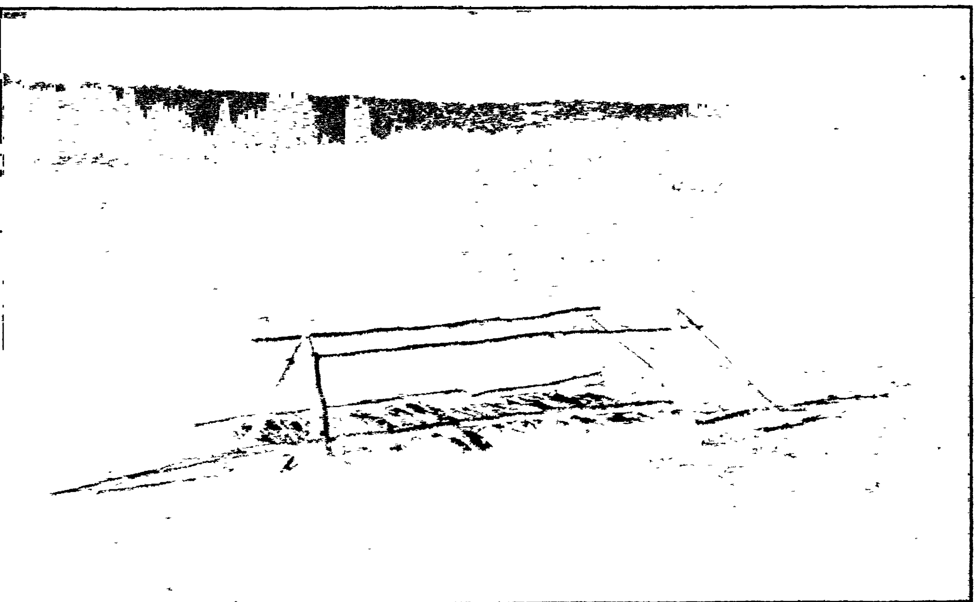
The mountains, the tops of which form the Hawaiian Islands, are volcanic in origin. Some of the volcanoes are active at the present time, and they form one of the Hawaiian attractions. The island of Hawaii is practically made up of several volcanic mountains. The highest of these, as well as the highest in the group, is Mauna Kea (the white mountain), which is nearly 14,000 feet in altitude. Mauna Loa (the great mountain) is only a little lower, and on its southern slope is Kilauea.

The volcanoes of the Hawaiian Islands do not have violent explosive outbreaks as does Vesuvius. On

this account, they are called non-explosive volcanoes. At intervals the lava rises in the craters and overflows or breaks through openings on the slopes of the mountains. Great streams of lava have flowed from Mauna Loa to the sea, a distance of about 50 miles. When this volcano is not in action, one can go down into its crater and observe the molten lava boiling and surging to and fro far below.

Kilauea is so great an attraction that a road has been constructed from the city of Hilo to its summit. The mountain is visited by large numbers of tourists who make the trip to the crater in automobiles. Far down in the crater is a lake of molten lava covering about 15 acres.

The latitude of the Hawaiian Islands is practically the same as that of the West Indies; and the climate is, therefore, tropical. As the area is so small, the ocean exerts a great influence upon the climate. As a result, the temperature conditions are very uniform. There is comparatively little difference between the weather of July and that of January. Snow is unknown except upon the tops of the highest mountains, where it remains for a large part of the year. One can stand in the midst of tropical vegetation near sea level and gaze at snow fields on the summit of Mauna Kea. In what other parts of the world is it possible to have a similar experience?



Courtesy Hawaiian Promotion Committee

FIG 55 — Fissure in Lava Flow, Volcano of Kilauea.



Fig. 56. — Cocoanut Palms, Hawaiian Islands.

The islands are in the belt of the northeast trade winds; and, as a result, the east slopes receive more rainfall than do the west slopes. In some places the annual precipitation on the windward side amounts to 75 inches; and in the upper Waipio valley, on the island of Hawaii, 353 inches have been recorded in a year. There are localities on the west slope where the annual rainfall is less than 25 inches.

Vegetation is much more luxuriant on the east than on the west slope. Why? Near sea level it is tropical in character. Tree ferns, palms, cocoanut, banana, rubber, and other plants that cannot endure cold weather, are found in the forests.

Agriculture is favored by the

deep fertile soil, the result of the disintegration of the lava, and by the climatic conditions. The people use up-to-date tools and machinery and farm scientifically. The most important crops are sugar, pineapples, coffee, rice, bananas, sisal, tobacco, and citrus fruits. Rice was introduced in 1858 and sisal in 1893.

One of the valuable native plants is the kalo or taro, from the roots of which the dish known as poi is made. The roots are baked in underground ovens, after which they are pounded in water. The material is then allowed to ferment and is served cold. Formerly the natives made a beautiful cloth called tapa from the inner bark of the mulberry tree, and a tree known as ti furnished the material for thatching the roofs of the houses.

At the time of the discovery of the islands by Europeans, animal life was quite limited. This was the natural result of the fact that the Hawaiian Islands are so far from other land areas. Horses, cattle, and sheep were unknown at the time mentioned, but they have since been introduced.

There is practically no mineral wealth upon the islands; and this, of course, has greatly hindered manufacturing. From the short but swift streams considerable water power can be developed. This will, in a measure, take the place of coal deposits.



Fig 57 — Natives Cutting Sugar Cane on a Plantation in the Hawaiian Islands

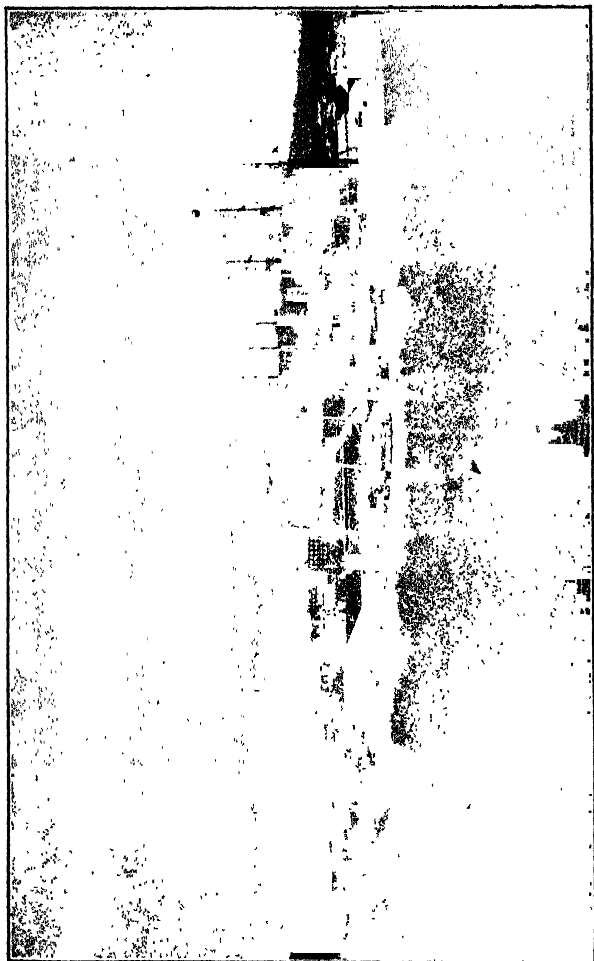
The chief industry is the tilling of the soil. Sugar is the most important manufacture, and is the leading export. Much American capital is invested in the plantations and the sugar mills, and the sugar is exported to San Francisco. Other exports are canned pineapples, coffee, and copra.

Honolulu, the largest city in the islands, is situated on the southwest coast of the island of Oahu. It is about 12 miles from a magnificent bay known as Pearl Harbor, which is entered through an opening in a coral reef.

Because the city is on the leeward side of the island, the rainfall is moderate, being only about 25 inches annually. Back of the city rises a volcanic mountain the crater of which is known as the "Punch Bowl." As there is a good road to the summit the trip is a favorite one. An automobile road now leads entirely around the island.

Honolulu is in every way a modern city. It has electric cars, electric lights, and beautiful parks. Its harbor light can be seen at a distance of 25 miles. It is well supplied with schools, churches, and social organizations of various kinds. Some of its chief imports are coal, petroleum, machinery, clothing, meat, and flour. It exports sugar, pineapples, and copra. In 1910 the population of Honolulu was 52,183.

The chief city on the island of Hawaii is Hilo, which



Photograph from Jane M. Cummings.

FIG. 58. — Harbor of Honolulu.

in 1910 had a population of about 8000. It is the second city in the islands in population and commerce. It has a good harbor and exports sugar and rice.

The native Hawaiians belong to the Malay race. They are a very intelligent people, but are steadily diminishing in numbers. The first Europeans to visit the islands found the natives a pleasure-loving people whose simple wants were easily supplied. Music, dancing, boating, and swimming have always been popular amusements.

It was found that foreign labor was necessary in order to develop the islands. Nearly one half of the total population is now Japanese. There are many Chinese, Koreans, and Filipinos, and some Americans and Europeans.

In 1527 the islands were discovered by the Spanish, but they made no attempt to develop them. In 1778 they were visited by Captain Cook, an English navigator who named them the Sandwich Islands in honor of the Earl of Sandwich. For a long time this was the only name applied to them. The Hawaiian Islands were annexed to the United States in 1898 and now constitute one of our territories. Name the others. Because of the delightful climate and the beautiful scenery, they are visited by large numbers of tourists.

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